PART III UNIT-SPECIFIC CONDITIONS FOR FINAL STATUS OPERATIONS

OPERATING UNIT 11

Integrated Disposal Facility

Appendix 4A - Section 3 **Contents**

Critical Systems Design Drawings

Drawings redacted in electronic version. These documents may be viewed by appointment (509-372-7920) at the Washington State Department of Ecology Richland Office Library, 3100 Port of Benton Boulevard, Richland, Washington.

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Resource Center
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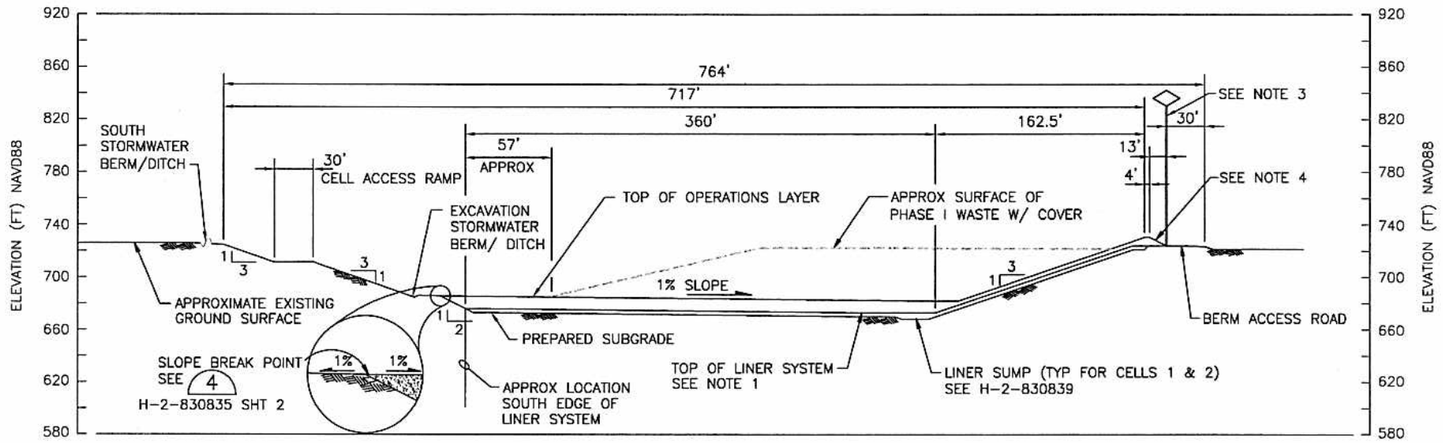
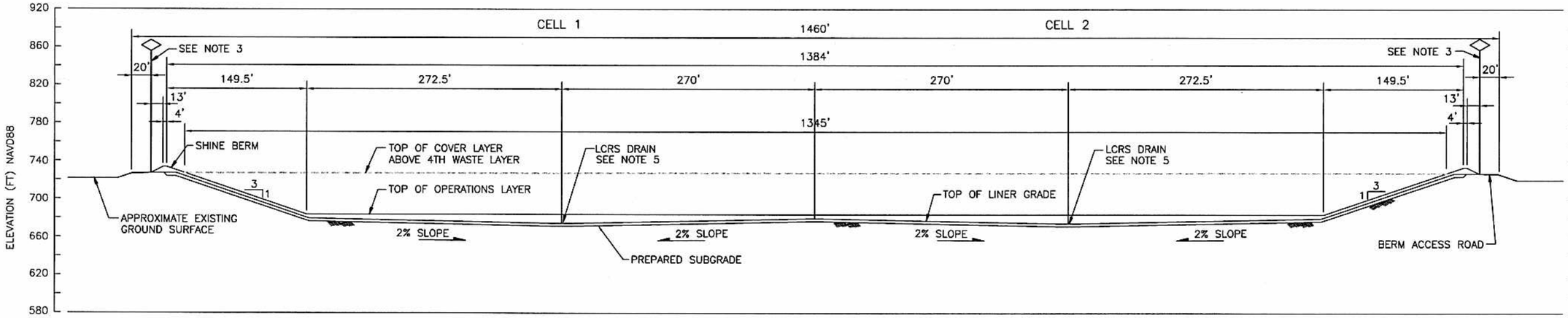
Please contact Valarie Peery at
(509) 372-7920
for a viewing appointment.



SECTION A
1" = 60' H-2-830830

NOTES:

1. FOR LINER SYSTEM, SEE H-2-830836 AND H-2-830838.
2. FOR SUBGRADE LAYER AND OPERATIONS LAYER DETAILED SECTIONS, SEE H-2-830833 AND H-2-830834.
3. SURVEY CONTROL LINE, SEE H-2-830829, H-2-830833 AND H-2-830834.
4. CREST PAD BLDG NOT SHOWN. SEE H-2-830846 FOR DETAILS.
5. SEE H-2-830845 FOR LCRS PIPING PLAN.



SECTION B
1" = 60' H-2-830830

0 60 120 180
1"=60'

BLDG. NO.

INDEX NO.

THIS SPACE RESERVED FOR BUILDING AND INDEX NUMBERS

JOHN N. WINTERS STATE OF WASHINGTON 30601 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 04/04/[illegible]

CH2MHILL

NAME	DATE	COMPANY
DRAWN BY G. ALMSTROM	2/5/04	CH2MHill
CHKD APPROVED J. WINTERS	2/5/04	CH2MHill
DESIGN AUTHORITY K. CROES	2/19/04	CH2MHill

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE
IDF
GRADING AND DRAINAGE SECTIONS

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	200E	0111	H-2-830832	A

SCALE 1"=60' EDT 634144 SHEET 1 OF 1

DWG NO	TITLE
DRAWING TRACEABILITY LIST	

REF NUMBER	TITLE
REFERENCES	
NEXT USED ON	

MFD	REV NO	DESCRIPTION	REV BY DATE	ENGR COMPANY
REV Rel		REVISIONS		

XXXX PLOTID XXXX

ORP_TS_D [12-02].DWG

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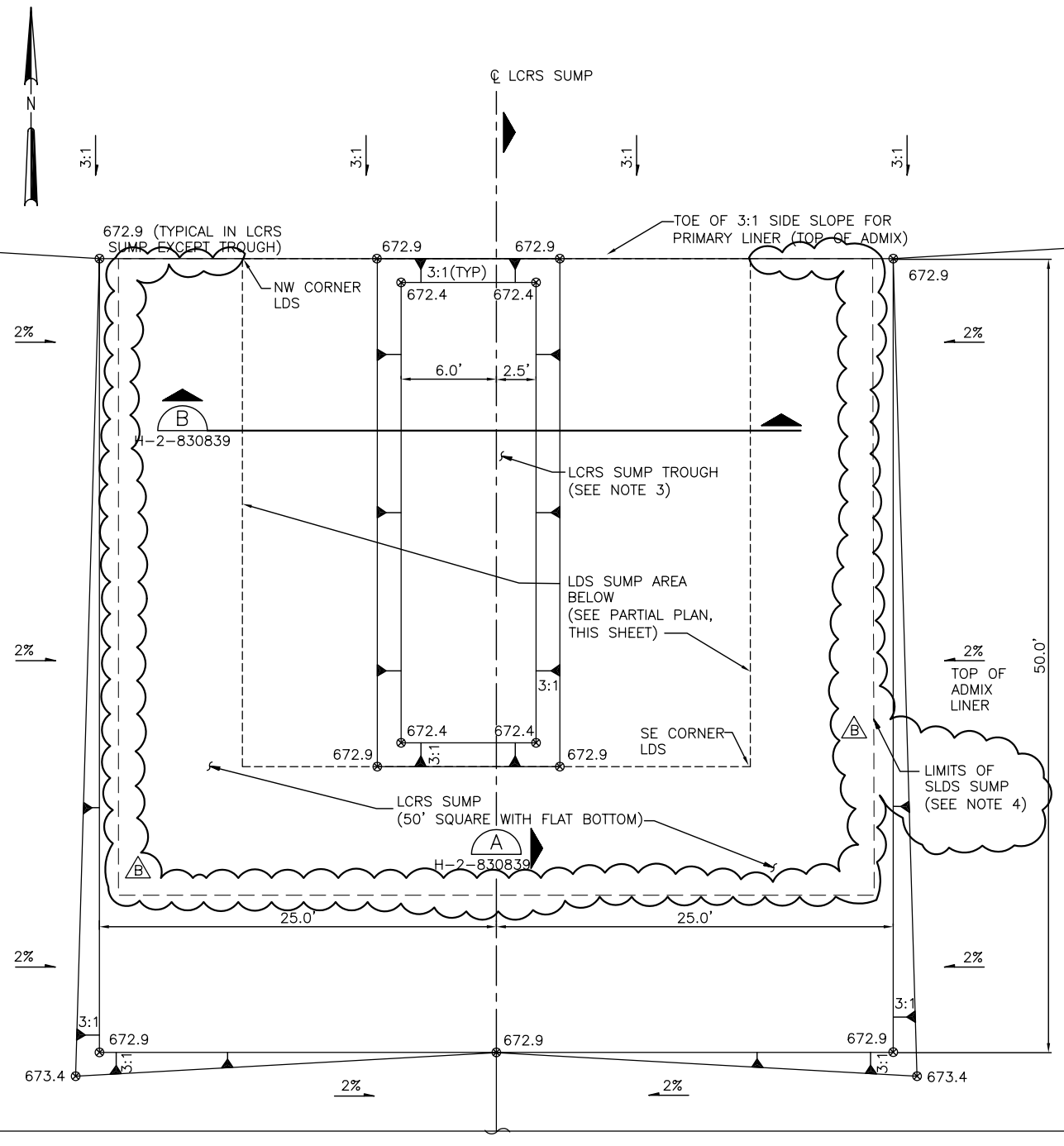
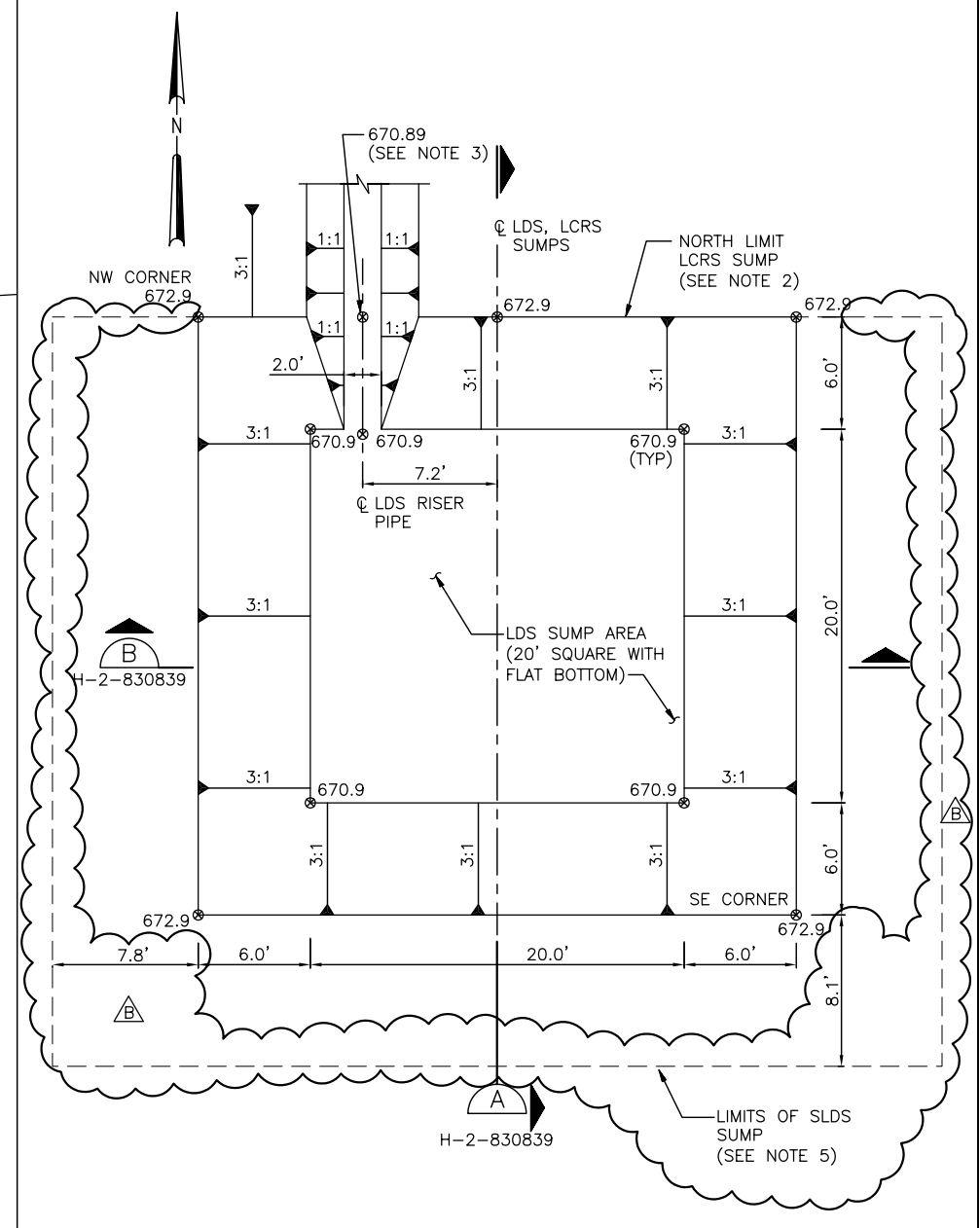


LCRS SUMP PARTIAL PLAN

1" = 5'-0" H-2-830836



LDS SUMP PARTIAL PLAN

1" = 5'-0"

LCRS SUMP PARTIAL PLAN NOTES:

1. GRADES SHOWN ARE TOP OF ADMIX LINER EXCEPT WITHIN LCRS SUMP TROUGH AND LDS SUMP AREAS. WITHIN LCRS SUMP TROUGH AND LDS SUMP AREAS GRADES SHOWN ARE TOP OF PRIMARY GEOMEMBRANE. SEE LDS SUMP PARTIAL PLAN FOR TOP OF ADMIX GRADES IN THIS AREA.
2. FOR SUBGRADE CONTROL LINE BELOW LCRS SUMP, SEE CELL 1 AND 2 SUMP SUBGRADE TABLES ON DWG. H-2-830829, SHEET 2 OF 2. (B)
3. SEE SPECIFICATION SECTION 02661 FOR GEOMEMBRANE PANEL LAYOUT REQUIREMENTS FOR LCRS SUMP TROUGH.
4. SEE DWG H-2-830849 SHEET 2 FOR SLDS PARTIAL PLAN. (B)

LDS SUMP PARTIAL PLAN NOTES:

1. GRADES SHOWN ARE TOP OF ADMIX LINER.
2. PRIMARY AND SECONDARY GEOMEMBRANE GRADES MATCH AT EL 672.89 (TYP ALL SIDES OF LDS SUMP). CONTINUE 3:1 SLOPE TO ANCHOR TRENCH AT PERIMETER DIKE.
3. START 3:1 SLOPE AT TRENCH BOTTOM. BEGIN TRANSITION TO MAINTAIN 2'-0" DEPTH BELOW PRIMARY LINER GRADES SHOWN ON H-2-830836
4. FOR SUBGRADE CONTROL LINES BELOW LDS SUMP, SEE CELL 1 AND 2 SUMP SUBGRADE TABLES ON DWG. H-2-830829, SHEET 2 OF 2. (B)
5. SEE DWG H-2-830849 SHEET 2 FOR SLDS PARTIAL PLAN.

BLDG. NO. 200E

INDEX NO. 0111

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MICHAEL W. REIMBOLD STATE OF WASHINGTON 28614 REGISTERED PROFESSIONAL ENGINEER

EXPIRES 12/24/

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DRAWING TRACEABILITY LIST		REFERENCES		REVISIONS					
DWG NO	TITLE	REF NUMBER	TITLE	MFD REV Rel	REV NO	DESCRIPTION	REV BY DATE		ENGR COMPANY
		NEXT USED ON			B	ADDITION OF SLDS	4/19/04	M REIMBOLD	CH2MHill

NAME	DATE / COMPANY
DRAWN BY R LATTA	CH2MHill
DPTG APPROVED M REIMBOLD	CH2MHill
DESIGN AUTHORITY E GIRGIS	

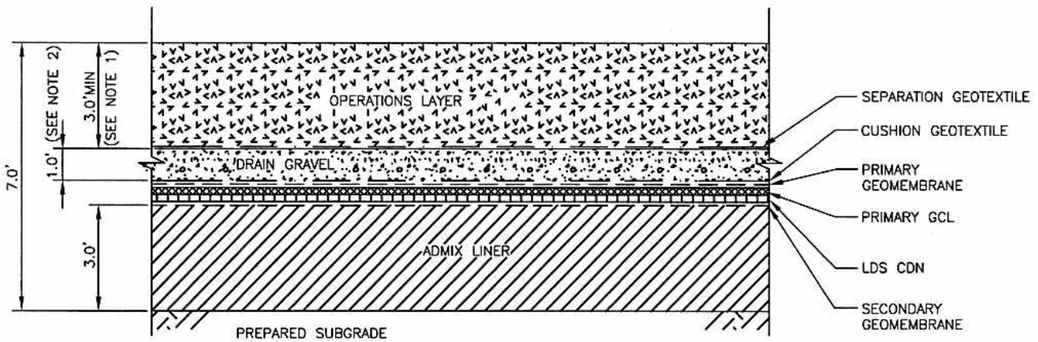
U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE
IDF CELLS 1 AND 2 SUMP PARTIAL PLANS

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	200E	0111	H-2-830837	B

SCALE 1'=100' EDT 634144 SHEET 1 OF 1

XXXX PLOTID XXXX ORP_TB_D [12-02].DWG



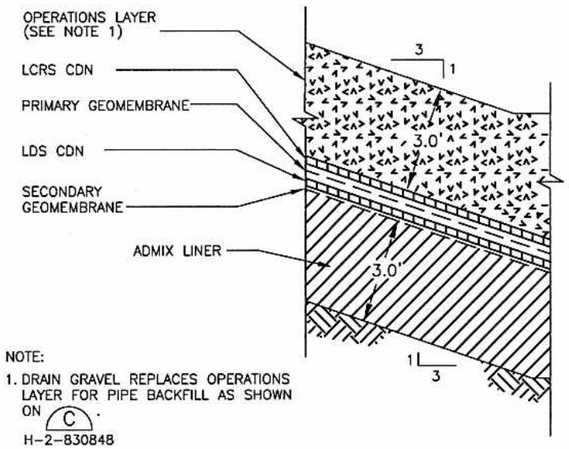
NOTES:

1. OPERATIONS LAYER THICKNESS VARIES ACROSS CELL BOTTOM WITH A 3-FOOT MIN. THICKNESS.
2. INCREASE DRAIN GRAVEL THICKNESS IN VICINITY OF LEACHATE COLLECTION AND RISER PIPES IN LCRS SUMP AS SHOWN ON (B) H-2-830848 AND (D) H-2-830845

BOTTOM LINER DETAIL (1)

NTS

H-2-830836, H-2-830839
H-2-830840, H-2-830848, H-2-830845



NOTE:

1. DRAIN GRAVEL REPLACES OPERATIONS LAYER FOR PIPE BACKFILL AS SHOWN ON (C) H-2-830848.

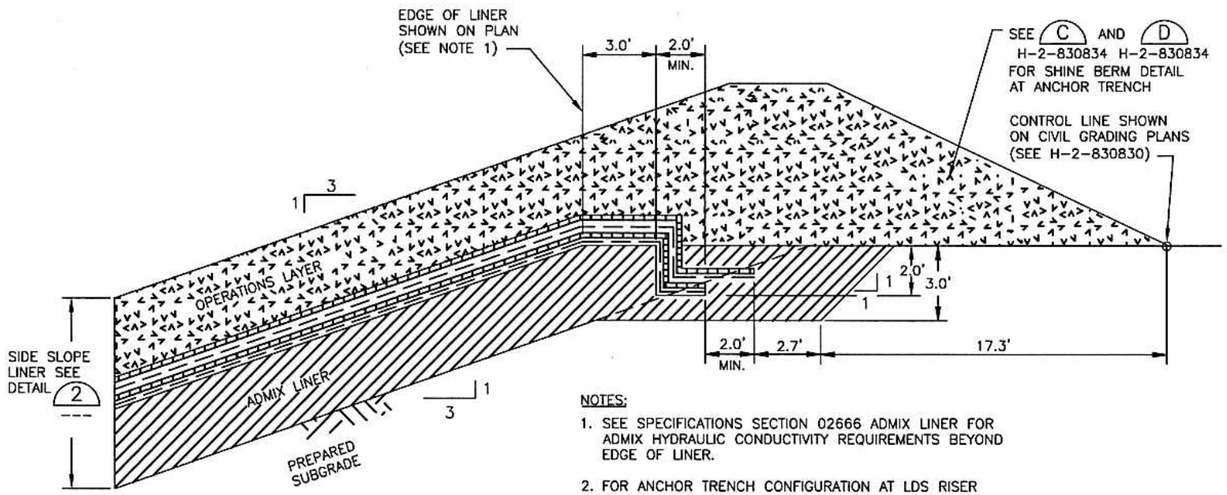
GENERAL NOTE (H-2-830838 THROUGH 830840)

SPACING BETWEEN GEOSYNTHETIC LAYERS IS EXAGGERATED FOR CLARITY.

SIDE SLOPE LINER DETAIL (2)

NTS

H-2-830836, H-2-830839,
H-2-830840, H-2-830848, H-2-830849



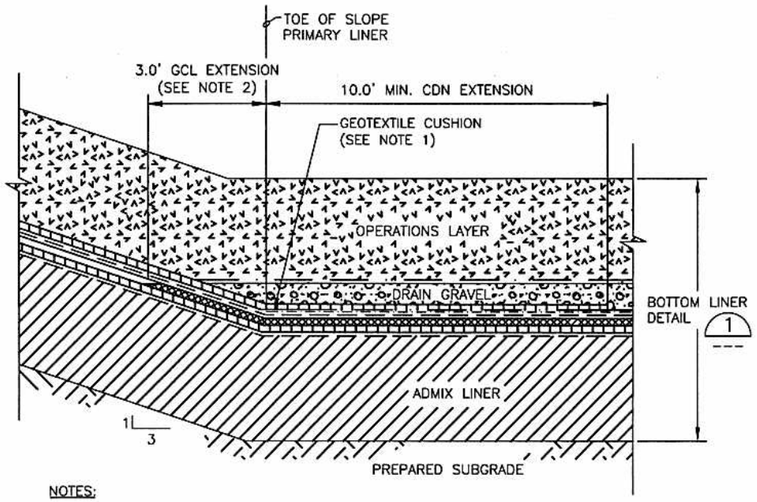
NOTES:

1. SEE SPECIFICATIONS SECTION 02666 ADMIX LINER FOR ADMIX HYDRAULIC CONDUCTIVITY REQUIREMENTS BEYOND EDGE OF LINER.
2. FOR ANCHOR TRENCH CONFIGURATION AT LDS RISER PIPE TRENCH SEE SECTION C ON DWG. H-2-830847.

LINER ANCHOR TRENCH DETAIL (3)

NTS

H-2-830834, H-2-830836



NOTES:

1. GEOTEXTILE CUSHION ENDS AT TOE OF SLOPE
2. EXTEND GCL 3.0' UP SLOPE (HORIZONTAL LENGTH) TO TOP OF DRAIN GRAVEL.

TOE OF SLOPE LINER DETAIL (4)

NTS

H-2-830836, H-2-830839

MICHAEL W. REIMUS — STATE OF WASHINGTON — 28614 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES 12/24/04

THIS SPACE RESERVED FOR BUILDING AND INDEX NUMBERS

BLDG. NO. 200E

INDEX NO. 0111

CH2MHILL

NAME	DATE	COMPANY
DRAWN BY R. LATTA	2/9/04	CH2MHill
DSN APPROVED M. REIMBOLD	2/9/04	CH2MHill
DESIGN AUTHORITY E. CRIGER	2/9/04	CH2MHill

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE: IDF GEOSYNTHETICS SECTIONS AND DETAILS

SIZE D | BLDG NO 200E | INDEX NO 0111 | DWG NO H-2-830838 | REV A
SCALE AS SHOWN | EDF 634144 | SHEET 1 OF 1

XXXX PLOTID XXXX

DRAWING TRACEABILITY LIST

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		NEXT USED ON	REFERENCES

REVISIONS

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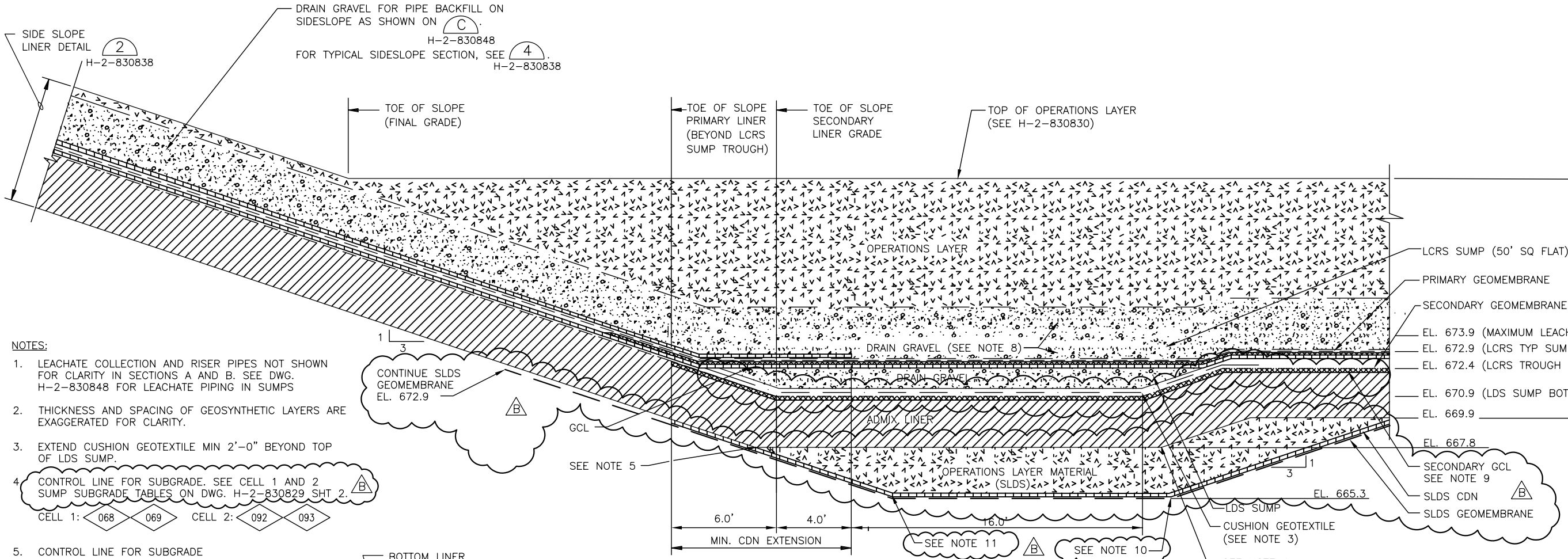
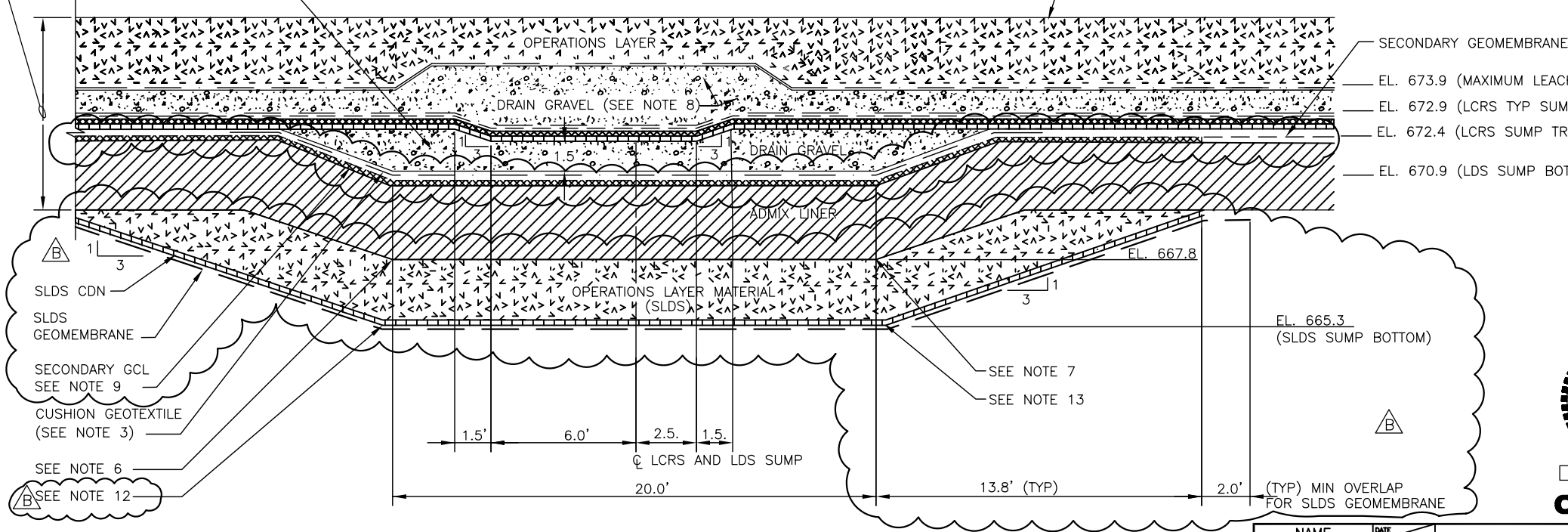


SUMP NORTH – SOUTH SECTION A

NTS H-2-830837, H-2-830848



SUMP EAST – WEST SECTION B

NTS H-2-830837

NOTES:

1. LEACHATE COLLECTION AND RISER PIPES NOT SHOWN FOR CLARITY IN SECTIONS A AND B. SEE DWG. H-2-830848 FOR LEACHATE PIPING IN SUMPS
2. THICKNESS AND SPACING OF GEOSYNTHETIC LAYERS ARE EXAGGERATED FOR CLARITY.
3. EXTEND CUSHION GEOTEXTILE MIN 2'-0" BEYOND TOP OF LDS SUMP.
4. CONTROL LINE FOR SUBGRADE. SEE CELL 1 AND 2 SUMP SUBGRADE TABLES ON DWG. H-2-830829 SHT 2. (B)
   CELL 1: 068 069 CELL 2: 092 093
5. CONTROL LINE FOR SUBGRADE
   CELL 1: 067 070 CELL 2: 091 094
6. CONTROL LINE FOR SUBGRADE
   CELL 1: 067 068 CELL 2: 091 092
7. CONTROL LINE FOR SUBGRADE
   CELL 1: 069 070 CELL 2: 093 094
8. INCREASE GRAVEL THICKNESS IN VICINITY OF LEACHATE COLLECTION AND RISER PIPES IN LCRS SUMP AS SHOWN IN B AND D H-2-830848 H-2-830845
9. PROVIDE GCL BENEATH SECONDARY GEOMEMBRANE WITHIN LIMITS OF SLDS SUMP SHOWN ON DWGS. H-2-830837 AND H-2-830849 SHT 2.
10. CONTROL LINE FOR SLDS SUMP SUBGRADE, SEE DETAILS 1 AND 2 ON DWG. H-2-830829 SHT 1.
    CELL 1: 065 066 CELL 2: 088 089
11. CONTROL LINE FOR SUBGRADE
    CELL 1: 056 072 CELL 2: 080 096
12. CONTROL LINE FOR SUBGRADE
    CELL 1: 056 066 CELL 2: 080 089
13. CONTROL LINE FOR SUBGRADE
    CELL 1: 065 072 CELL 2: 088 096

(B)

DWG NO	TITLE	REF NUMBER	TITLE
DRAWING TRACEABILITY LIST		NEXT USED ON	REFERENCES

MFD REV Rel	REV NO	DESCRIPTION	REV BY DATE	ENGR COMPANY
	B	ADDITION OF SLDS	4/19/04	M REIMBOLD CH2MHill

REVISIONS

NAME	DATE	COMPANY
DRAWN BY R LATTA		CH2MHill
DTG APPROVED M REIMBOLD		CH2MHill
DESIGN AUTHORITY E GIRGIS		

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE
IDF GEOSYNTHETICS SECTIONS AND DETAILS

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	200E	0111	H-2-830839	B

SCALE AS SHOWN EDT 634144 SHEET 1 OF 1

BLDG. NO. 200E

INDEX NO. 0111

MICHAEL W. REIMBOLD STATE OF WASHINGTON 28614 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 12/24/

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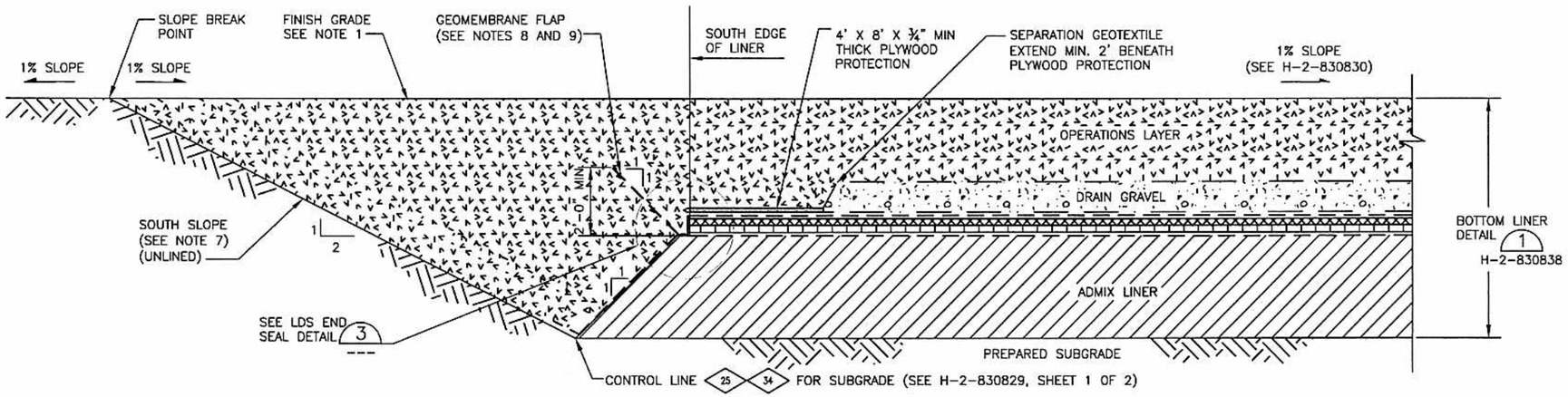
XXXX PLOTID XXXX ORP_TB_D [12-02].DWG

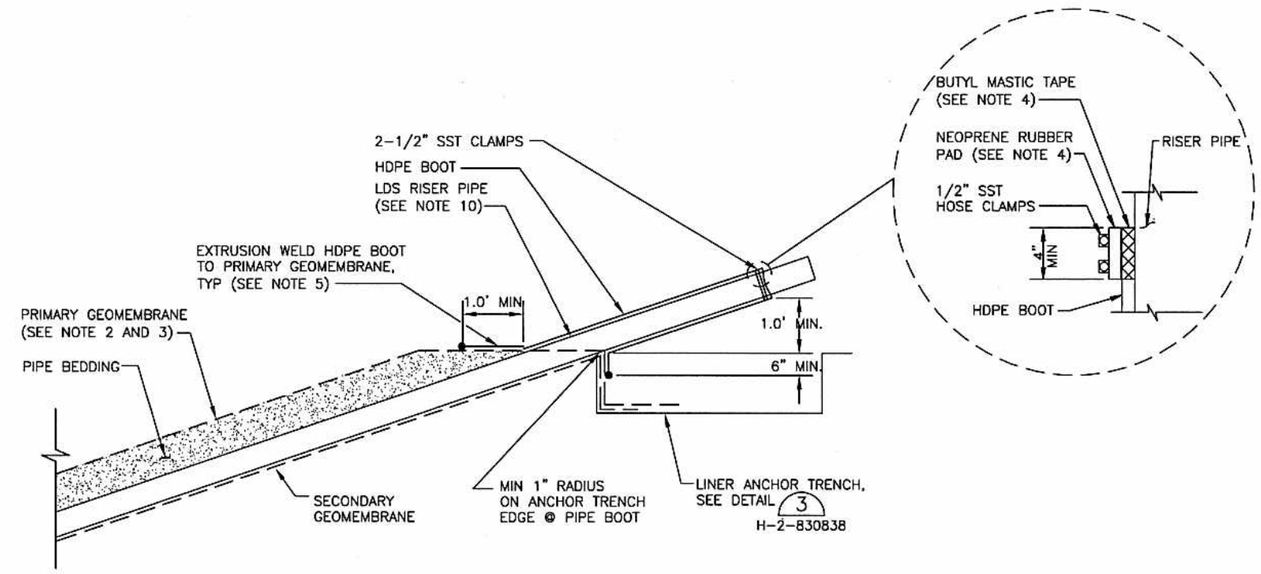


PHASE 1 SOUTH LINER EDGE TERMINATION DETAIL 1

NTS H-2-830836

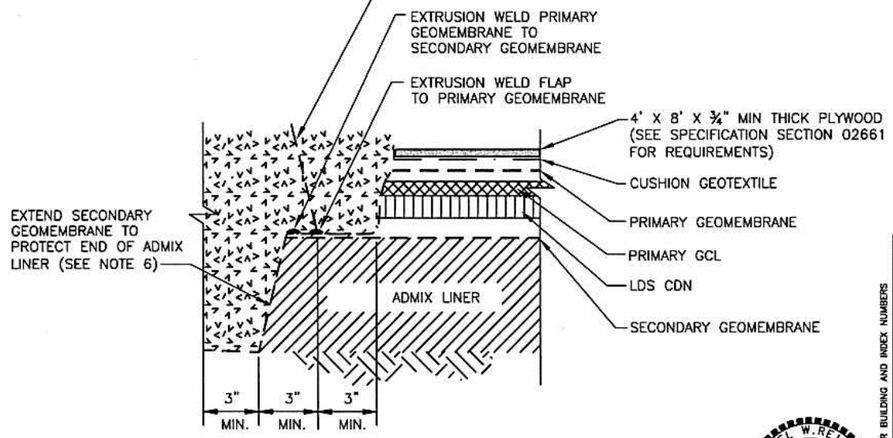
NOTE FOR DETAILS ON H-2-830840:

1. SEE DWG H-2-830830 FOR FINAL GRADING AND DRAINAGE PLAN ABOVE OPERATIONS LAYER AT SOUTH LINER EDGE.
2. OVERLYING LINING SYSTEM COMPONENTS NOT SHOWN FOR CLARITY. SEE SIDE SLOPE LINER DETAIL 3 H-2-830838
3. ONLY PRIMARY GEOMEMBRANE REQUIRES CONNECTION TO BOOT. FOR OTHER GEOSYNTHETICS, CUT OPENING 1/2" LESS THAN PIPE OD.
4. BUTYL MASTIC TAPE AND NEOPRENE RUBBER PAD APPLIED CONTINUOUSLY AROUND PIPE.
5. FORM BOOT WITH SUFFICIENT MATERIAL TO PREVENT OVERSTRESSING DURING BACKFILLING, BUT WITHOUT FOLDS OR WRINKLES.
6. PROTECT LEADING EDGE OF GEOMEMBRANE AGAINST WIND UPLIFT PRIOR TO PLACEMENT OF OPERATIONS LAYER. CONTRACTOR SHALL SELECT BEST METHOD AVAILABLE SUCH AS SAND BAGS OR TEMPORARY SOIL BERM.
7. CONTRACTOR MAY MODIFY SUBGRADE AT SOUTH SLOPE AS NEEDED FOR GEOSYNTHETICS INSTALLATION ACCESS. BACKFILL TO FINISH GRADE AS SHOWN.
8. PROVIDE GEOMEMBRANE FLAP AS SHOWN ACROSS LANDFILL FLOOR FOR CELL 1 AND 2. EXTEND MINIMUM 6 FEET UP 3:1 SIDE SLOPE FROM TOE OF SLOPE.
9. PROVIDE GEOMEMBRANE PIPE BOOT SIMILAR TO 2 --- FOR LCRS CLEANOUT IN CELLS 1 AND 2 SHOWN ON H-2-830845.
10. SEE SECTION C ON DWG H-2-830847 FOR LDS RISER PIPE DETAIL.



TYPICAL GEOMEMBRANE BOOT DETAIL 2

NTS H-2-830847, H-2-830849



LDS END SEAL DETAIL 3

NTS

BLDG. NO. 200E

INDEX NO. 0111

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MICHAEL W. REMPEL STATE OF WASHINGTON 20614 REGISTERED PROFESSIONAL ENGINEER

EXPIRES 12/24/07

CH2MHILL

DRAWING TRACEABILITY LIST		REFERENCES	
DWG NO	TITLE	REF NUMBER	TITLE
NEXT USED ON			

REVISIONS				
MFD REV Rel	REV NO	DESCRIPTION	REV BY DATE	CHGR COMPANY

NAME	DATE	COMPANY
DRAWN BY R. LATTA	4/5/04	CH2MHill
CHKD APPROVED M. REDMOLD	4/5/04	CH2MHill
DESIGN AUTHORITY E. CRISPS	4/5/04	CH2MHill

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE: IDF GEOSYNTHETICS SECTIONS AND DETAILS

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	200E	0111	H-2-830840	A

SCALE AS SHOWN | EDT 634144 | SHEET 1 OF 1

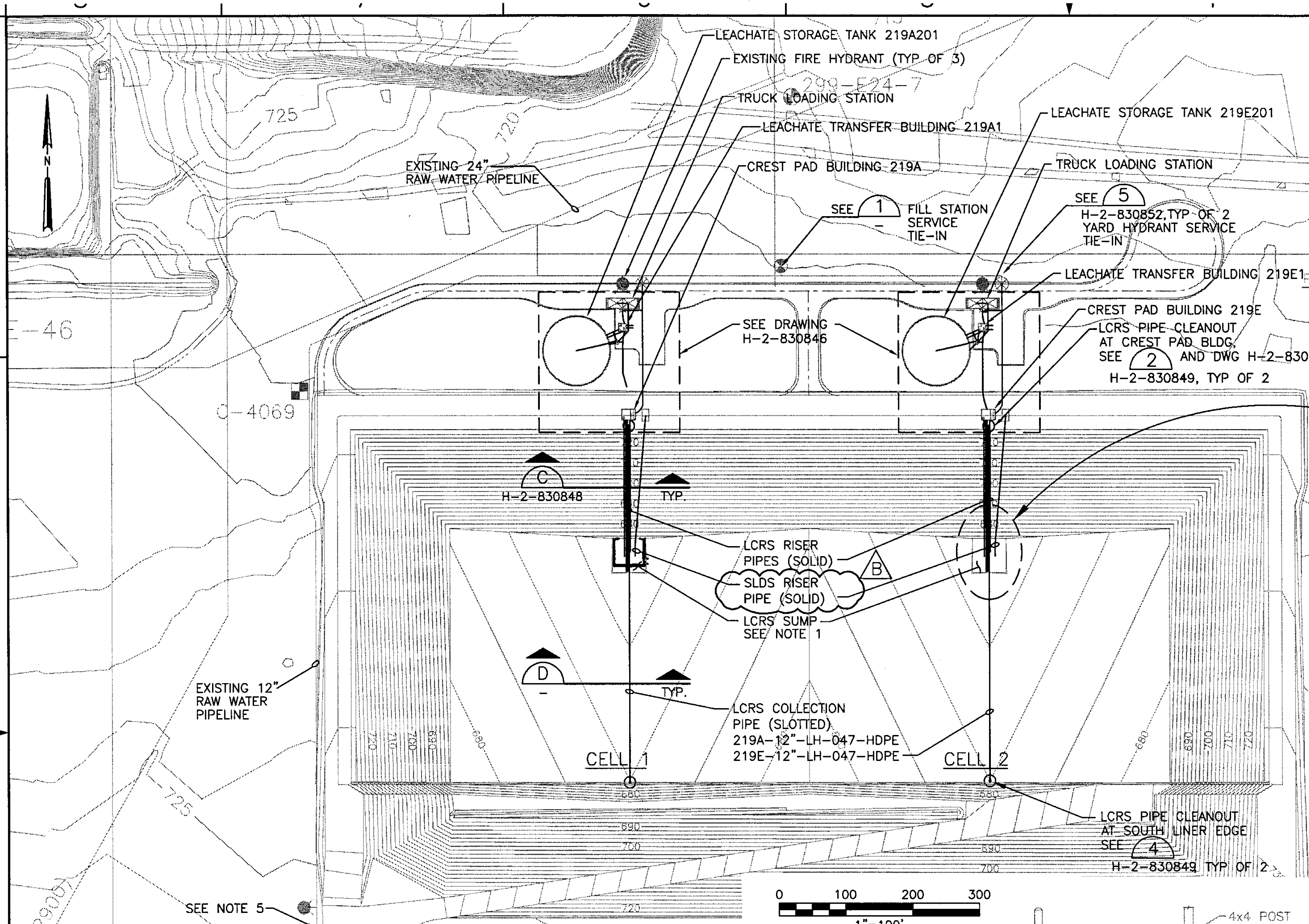
XXXX PLOTID XXXX

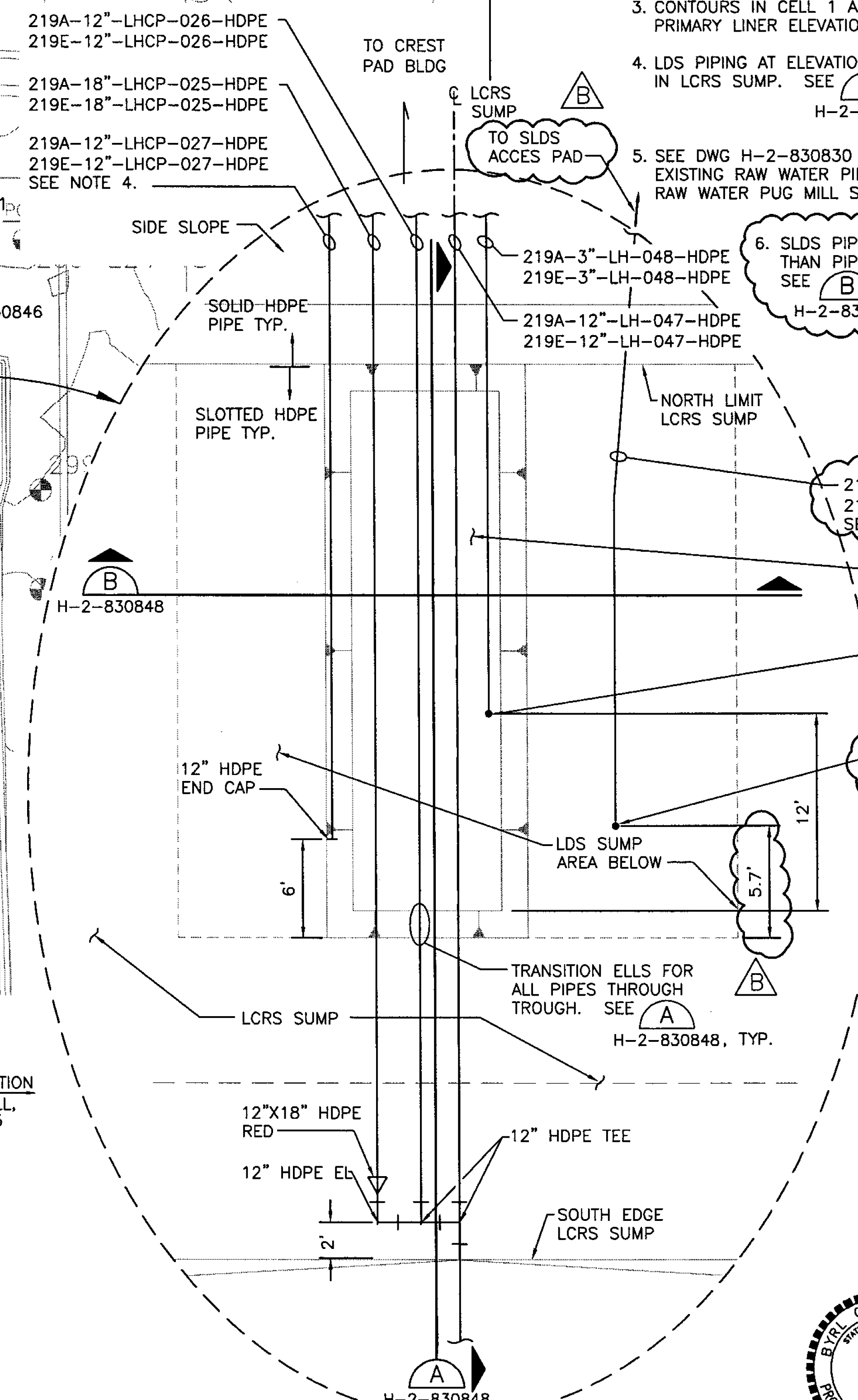
ORP_TB_D [12-02].DWG

H-2-830845 1 OF 1 B

LCRS PIPE PLAN NOTES:

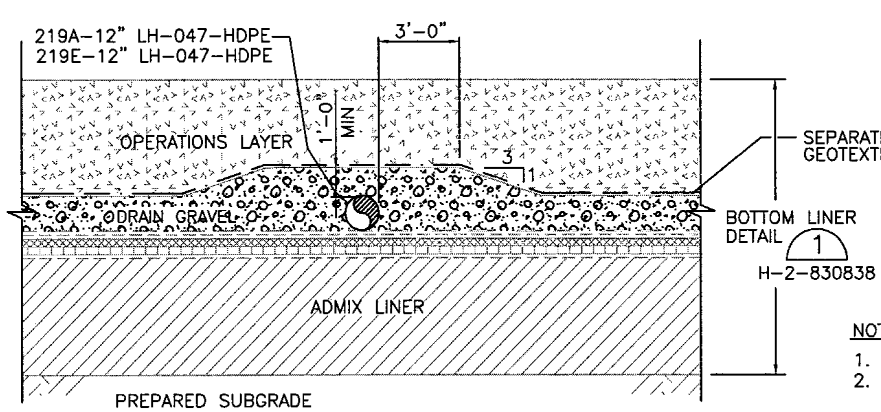
1. SEE DWG. H-2-830837 FOR LDS & LCRS SUMP DETAILS THIS AREA.
2. CENTERLINES OF PIPES SHOWN.
3. CONTOURS IN CELL 1 AND 2 AREA ARE TOP OF PRIMARY LINER ELEVATIONS.
4. LDS PIPING AT ELEVATION LOWER THAN PIPES IN LCRS SUMP. SEE B H-2-830848
5. SEE DWG H-2-830830 FOR CONTINUATION OF EXISTING RAW WATER PIPELINE, AND NEW RAW WATER PUG MILL SERVICE TIE-IN.
6. SLDS PIPING AT ELEVATION LOWER THAN PIPES IN LDS SUMP. SEE B H-2-830848 (B)





TYPICAL LCRS/LDS SUMP PIPING SCHEMATIC CELLS 1 & 2

NTS

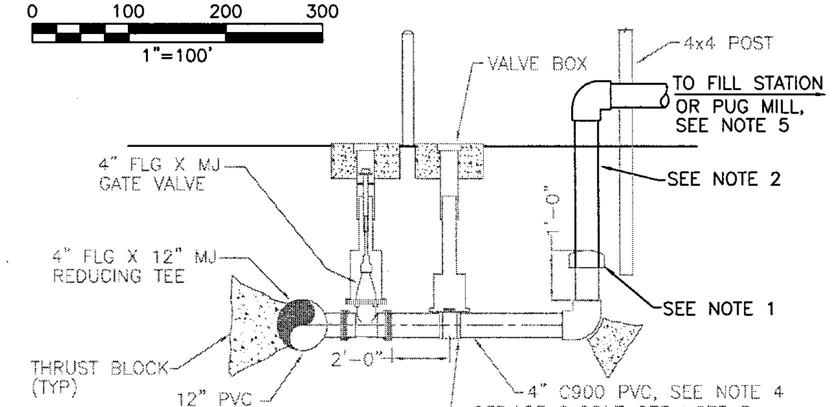


NOTES:

1. OPERATIONS LAYER THICKNESS VARIES ACROSS CELL BOTTOM WITH A 3-FOOT MIN. THICKNESS.

LCRS COLLECTION PIPE (D) H-2-830849

NTS



NOTES:

1. REMOVE 4" X 4" POST AND EXISTING PVC CAP.
2. INSTALL 4" SOCKET WELD PIPING AND FITTINGS AS REQUIRED FOR BELOW AND ABOVE GROUND TIE-IN OF FILL STATION AND PUG MILL.
3. 1" DRAIN VALVE, 1" DIA X 12" LONG GSP, AND 2 CUBIC FEET OF DRAIN GRAVEL NOT SHOWN FOR CLARITY.
4. EXISTING 4" C900 PVC IS APPROXIMATELY 200' LONG FOR PUG MILL SERVICE AND APPROXIMATELY 10' LONG FOR FILL STATION SERVICE.
5. COORDINATE WITH CONSTRUCTION MANAGER FOR REQD DEMOLITION OF ABOVE GROUND PIPING AND RE-CAPPING OF BURIED PIPING AFTER PROJECT COMPLETION.

FILL STATION/PUG MILL TIE-IN (1) H-2-830830

NTS

DWG NO	TITLE	REF NUMBER	TITLE
DRAWING TRACEABILITY LIST		REFERENCES	
		NEXT USED ON	

REV NO	DESCRIPTION	REV BY DATE
B	ADDITION OF SLDS	4/23/04

REVISIONS

NAME	DATE	COMPANY
DRAWN BY T. SIM		CH2MHILL
DFTG APPROVED B. THOMPSON		CH2MHILL
ENGR E THOMAS		CH2MHILL
DESIGN AUTHORITY E GROSS		

BLDG. NO. 200E

INDEX NO. 8500

THIS SPACE RESERVED FOR BUILDING AND INDEX NUMBERS

BYRL C. THOMPSON, STATE OF WASHINGTON, 29159 REGISTERED PROFESSIONAL ENGINEER

EXPIRES 4/20/

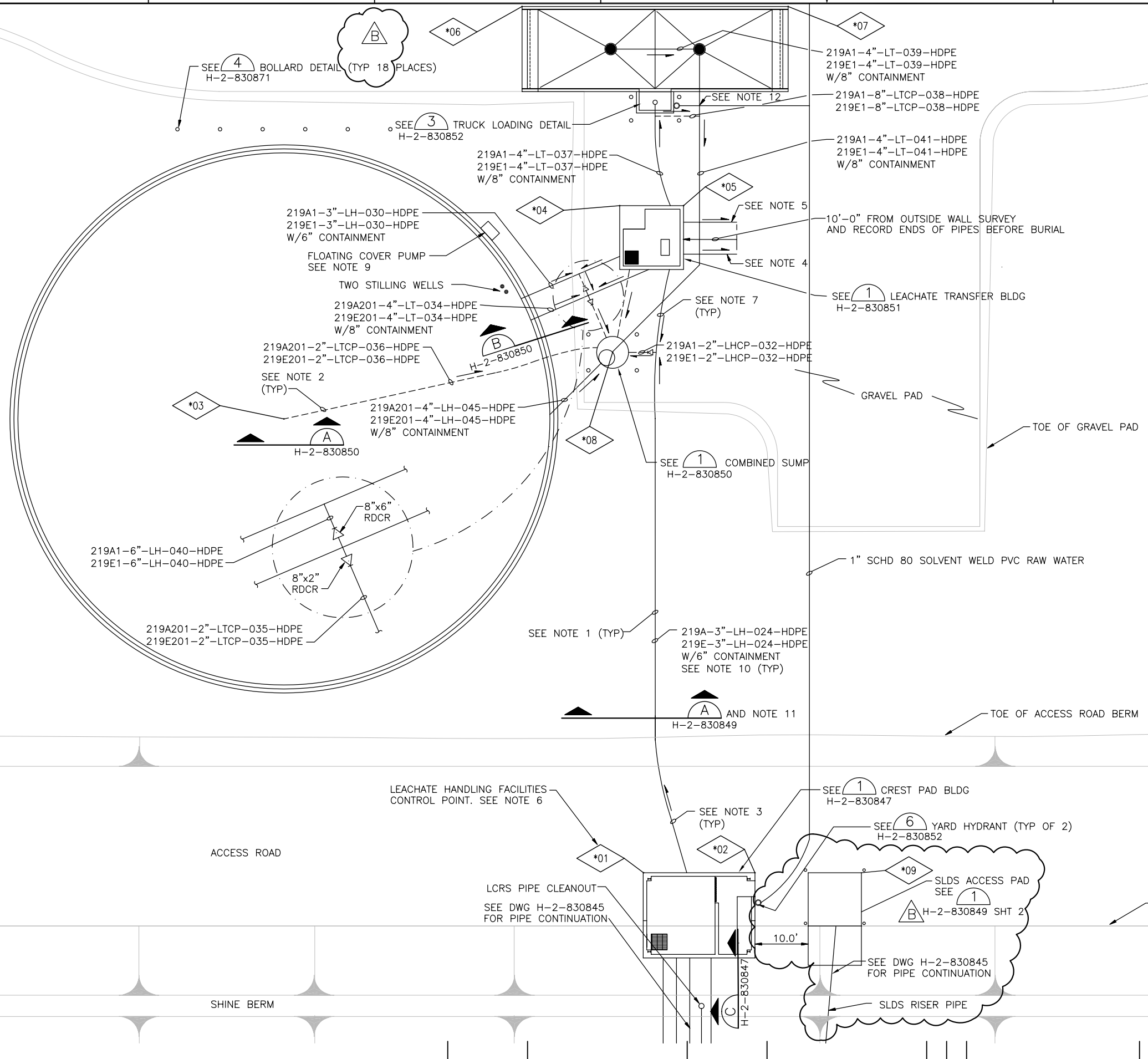
CH2MHILL

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE
IDF
LEACHATE COLLECTION
PIPING PLAN

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	200E	8500	H-2-830845	B

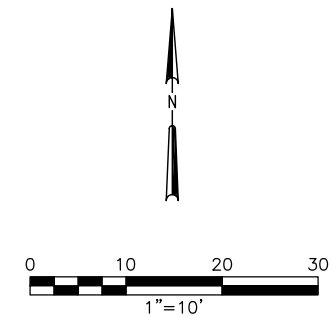
SCALE AS SHOWN | EDT 634144 | SHEET 1 OF 1



NOTES:

1. PIPES SHOWN AS SOLID LINES NORTH OF CREST PAD BLDG. INDICATE BURIED DOUBLE CONTAINED LEACHATE PIPING OR RAW WATER PIPING.
2. DASHED LINE INDICATES BURIED SINGLE WALL PIPING FOR SECONDARY CONTAINMENT SYSTEMS.
3. SLOPE ALL PIPING IN DIRECTION INDICATED AT 1% SLOPE MINIMUM. FOR PRIMARY PIPE FLOW DIRECTIONS, SEE P&ID'S ON H-2-830854, SHEETS 1 THROUGH 4.
4. INSTALL HDPE CAP ON CARRIER PIPE AND FIXED END SEAL FOR SECONDARY CONTAINMENT PIPE. THIS PIPE IS PROVIDED FOR FUTURE PUMP SUCTION CONNECTION TO FUTURE LEACHATE STORAGE TANK.
5. INSTALL HDPE CAP ON CARRIER PIPE AND FIXED END SEAL FOR SECONDARY CONTAINMENT PIPE. THIS PIPE IS PROVIDED FOR FUTURE LEACHATE TRANSFER BUILDING DISCHARGE CONNECTION TO FUTURE LEACHATE STORAGE TANK.
6. SEE DWG H-2-830829, SHT 2 FOR LEACHATE HANDLING FACILITIES SURVEY CONTROL POINTS. FOR CELL 1 FACILITIES CONTROL POINTS, REPLACE "*" WITH 4; FOR CELL 2 FACILITIES CONTROL POINTS, REPLACE "*" WITH 5.

   EXAMPLE: CELL 2 <*02> IS <502>
7. BEND RADIUS SHALL NOT BE LESS THAN ALLOWED BY PIPE MANUFACTURER.
8. STILLING WELLS SHALL BE INSTALLED PER TANK MANUFACTURER REQUIREMENTS AT THE LOCATION SHOWN FOR ANALOG AND DISCRETE LEVEL INSTRUMENTATION.
9. FLOATING COVER PUMP AND ASSOCIATED BASEPLATE/BRACKET SHALL BE INSTALLED PER TANK MANUFACTURER REQUIREMENTS AT THE LOCATION SHOWN. THIS PUMP SHALL BE OPERATED AS REQD TO MINIMIZE DEPTH OF RAIN/SNOWMELT ACCUMULATION ON TOP OF FLOATING COVER.
10. PIPING DESIGNATIONS ARE IDENTIFIED FOR CELL 1 AND CELL 2 LEACHATE PIPELINES. THE "219A" PREFIX IS FOR CELL 1 AND THE "219E" PREFIX IS FOR CELL 2.
11. APPLIES TO ALL PIPING NORTH OF CREST PAD BUILDING INCLUDING RAW WATER PIPING EXCEPT RAW WATER PIPIING SHALL HAVE MINIMUM 3'-6" OF COVER.
12. INSTALL 1" RAW WATER PIPE A MINIMUM OF 6" BELOW 8" HDPE PIPE.



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219A1
219A201
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219E201

INDEX NO.
8500

THIS SPACE RESERVED FOR BUILDING AND INDEX NUMBERS

EDWARD JOHN THOMAS STATE OF WASHINGTON 38907 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 8/4/

CH2MHILL

DWG NO	TITLE	REF NUMBER	TITLE
DRAWING TRACEABILITY LIST		NEXT USED ON	REFERENCES

REV NO	DESCRIPTION	REV BY DATE	ENGR COMPANY
B	ADDITION OF SLDS	4/19/04	E THOMAS CH2MHill

REVISIONS

NAME	DATE	COMPANY
DRAWN BY C BENTZ		CH2MHill
DPTG APPROVED E THOMAS		CH2MHill
DESIGN AUTHORITY E GIRGIS		

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE
IDF
LEACHATE TRANSFER
PIPING PLAN

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	219A 219A1	8500	H-2-830846	B

SCALE AS SHOWN EDT 634144 SHEET 1 OF 1

XXXX PLOTID XXXX
ORP_TB_D [12-02].DWG

TOE OF SLOPE (FINAL GRADE)

LCRS PIPE 12" LH-047-HDPE

TOP OF OPERATIONS LAYER (NTS)

PIPE ELLS AS REQUIRED TO MAINTAIN CONTACT W/LINER SYSTEM AND TO KEEP PIPE UNIFORM AND LEVEL THROUGH SUMP TROUGH

SIDE SLOPE LINER DETAIL 2 H-2-830838

OPERATIONS LAYER

LCRS SUMP TROUGH SEE H-2-830837

BOTTOM LINER DETAIL 1 H-2-830838

LCRS

SOLID PIPE

DRAIN GRAVEL (LDS)

SLOTTED PIPE

ADMIX LINER

SECONDARY GCL

2.0'

PIPE BEDDING

OPERATIONS LAYER MATERIAL (SLDS)

DRAIN GRAVEL

12" SLDS RISER PIPE SEE NOTE 4 (SHOWN BEYOND SECTION CUT)

PIPE BOOT SIM TO 2 H-2-830840

12"

SOLID PIPE

SLOTTED PIPE

SEE A H-2-830839

NOTES:

SEE NOTE 1, TYP

1. SOME LAYER THICKNESS FOR GEOSYNTHETIC MTLS ARE SHOWN EXAGGERATED FOR CLARITY. SOME PIPE LOCATIONS SHOWN VERTICALLY ABOVE GEOSYNTHETIC LAYERS FOR CLARITY. ACTUAL INSTALLED CONDITIONS WILL BE PIPE RESTING ON ADJACENT GEOSYNTHETIC LAYER.
2. AT SIDE SLOPE AND SUMP TRANSITIONS, BEND PIPE WITHIN MANUFACTURES RECOMMENDED MIN BEND RADIUS OR USE BUTT-FUSED PIPE FITTINGS TO MAINTAIN CLOSE CONTACT BETWEEN PIPE AND LINER SURFACE. FITTINGS SHALL HAVE SAME SDR AS PIPE. IF USED, CONFIRM W/ PUMP MANUFACTURER THAT FITTINGS ARE COMPATIBLE WITH RAISING AND LOWERING OF PUMP.
3. MULTIPLE DESIGNATIONS FOR PIPING NOT SHOWN FOR CLARITY. ALL PIPING LABELS UNDERSTOOD TO REPRESENT PIPING IN BOTH CELLS 1 AND 2. PREFIXES 219A AND 219E APPLY TO ALL PIPING.
4. ANGLE 12" SLDS PIPE TO PROVIDE REQUIRED CLEARANCE FROM CREST PAD BUILDING AS SHOWN ON H-2-830846.

LCRS & LDS SUMP NORTH - SOUTH SECTION A

NTS

H-2-830845
H-2-830849

LEACHATE COLLECTION SUMP PUMP P202

LEACHATE COLLECTION SUMP PUMP P203

LCRS HIGH FLOW PUMP RISER PIPE 18" LHCP-025-HDPE

LEACHATE COLLECTION RISER PIPE AND SUMP PUMP DETAIL 1 H-2-830849 , TYP

LCRS LOW FLOW PUMP RISER PIPE 12" LHCP-026-HDPE

LCRS PIPE 12"-LH-047

TRANSDUCER PIPE 3"-LH-048

TOP OF OPERATIONS LAYER (NTS)

SECONDARY GCL

3'0" TYP.

1.0' MIN.

OPERATIONS LAYER

DRAIN GRAVEL

DRAIN GRAVEL (LDS)

ADMIX LINER

OPERATIONS LAYER MATERIAL (SLDS)

2' MIN

SEE B H-2-830839

EL. 665.3

CUSHION GEOTEXTILE

2.5 2.5 2.2 1.8 7.2'

LDS PUMP RISER PIPE 12" LHCP-027-HDPE

LEAK DETECTION PUMP P204

SLDS CDN

SLDS GEOMEMBRANE

℄ LCRS SUMP

2' MIN SLDS SEPARATION GEOTEXTILE OVERLAY

DRAIN GRAVEL

12" SLDS RISER PIPE WITH PRESSURE TRANSDUCER SEE NOTE 4

LCRS & LDS SUMP EAST-WEST SECTION B

NTS

H-2-830845

OPERATIONS LAYER

LCRS CDN

PRIMARY GEOMEMBRANE

LDS CDN

SECONDARY GEOMEMBRANE

ADMIX LINER

LCRS LOW FLOW PUMP RISER PIPE 12" LHCP-026-HDPE

LCRS HIGH FLOW PUMP RISER PIPE 18"-LHCP-025-HDPE

℄ LCRS SUMP

LCRS PIPE 12" LH-047-HDPE

1'-0" MIN

3" LH-048-HDPE

SEPARATION GEOTEXTILE

1'-0" MIN.

SIDE SLOPE LINER DETAIL 2 H-2-830838

2'-0"

3'-0" TYP.

PIPE BEDDING

2'-0"

5.5' MIN.

LDS PUMP RISER PIPE 12" LHCP-027-HDPE

DISTANCE VARIES SEE NOTE 4

2'-0"

PIPE BEDDING

12" SLDS RISER PIPE

LCRS, LDS & SLDS SIDE SLOPE PIPING EAST-WEST C

NTS

H-2-830845

1'-0" MIN. OVERLAP

OPERATIONS LAYER

LCRS CDN

PRIMARY GEOMEMBRANE

LDS CDN

CUSHION GEOTEXTILE

SECONDARY GEOMEMBRANE

TRENCH

PIPE BEDDING

6" MIN. TYP

LCRS & LDS SUMP NORTH - SOUTH SECTION A

NTS

H-2-830845
H-2-830849

LEACHATE COLLECTION RISER PIPE AND SUMP PUMP DETAIL 1 H-2-830849 , TYP

LEACHATE COLLECTION SUMP PUMP P202

LEACHATE COLLECTION SUMP PUMP P203

LCRS HIGH FLOW PUMP RISER PIPE 18" LHCP-025-HDPE

LCRS LOW FLOW PUMP RISER PIPE 12" LHCP-026-HDPE

LCRS PIPE 12"-LH-047

TRANSDUCER PIPE 3"-LH-048

TOP OF OPERATIONS LAYER (NTS)

SECONDARY GCL

3'0" TYP.

1.0' MIN.

OPERATIONS LAYER

DRAIN GRAVEL

DRAIN GRAVEL (LDS)

ADMIX LINER

OPERATIONS LAYER MATERIAL (SLDS)

2' MIN

SEE B H-2-830839

EL. 665.3

CUSHION GEOTEXTILE

2.5 2.5 2.2 1.8 7.2'

LDS PUMP RISER PIPE 12" LHCP-027-HDPE

LEAK DETECTION PUMP P204

SLDS CDN

SLDS GEOMEMBRANE

℄ LCRS SUMP

2' MIN SLDS SEPARATION GEOTEXTILE OVERLAY

DRAIN GRAVEL

12" SLDS RISER PIPE WITH PRESSURE TRANSDUCER SEE NOTE 4

LCRS & LDS SUMP EAST-WEST SECTION B

NTS

H-2-830845

OPERATIONS LAYER

LCRS CDN

PRIMARY GEOMEMBRANE

LDS CDN

SECONDARY GEOMEMBRANE

ADMIX LINER

LCRS LOW FLOW PUMP RISER PIPE 12" LHCP-026-HDPE

LCRS HIGH FLOW PUMP RISER PIPE 18"-LHCP-025-HDPE

℄ LCRS SUMP

LCRS PIPE 12" LH-047-HDPE

1'-0" MIN

3" LH-048-HDPE

SEPARATION GEOTEXTILE

1'-0" MIN.

SIDE SLOPE LINER DETAIL 2 H-2-830838

2'-0"

3'-0" TYP.

PIPE BEDDING

2'-0"

5.5' MIN.

LDS PUMP RISER PIPE 12" LHCP-027-HDPE

DISTANCE VARIES SEE NOTE 4

2'-0"

PIPE BEDDING

12" SLDS RISER PIPE

LCRS, LDS & SLDS SIDE SLOPE PIPING EAST-WEST C

NTS

H-2-830845

1'-0" MIN. OVERLAP

OPERATIONS LAYER

LCRS CDN

PRIMARY GEOMEMBRANE

LDS CDN

CUSHION GEOTEXTILE

SECONDARY GEOMEMBRANE

TRENCH

PIPE BEDDING

6" MIN. TYP

BYRL C. THOMPSON STATE OF WASHINGTON 29159 REGISTERED PROFESSIONAL ENGINEER

EXPIRES 4/20/

BLDG. NO. 200E

INDEX NO. 8500

THIS SPACE RESERVED FOR BUILDING AND INDEX NUMBERS

DRAWING TRACEABILITY LIST		REFERENCES	
DWG NO	TITLE	REF NUMBER	TITLE
NEXT USED ON			

REVISIONS				
REV NO	DESCRIPTION	REV BY DATE	ENGR COMPANY	MFD REV PAR
B	ADDITION OF SLDS	4/19/04	M REIMBOLD CH2MHill	

NAME	DATE	COMPANY
DRAWN BY R LATTA		CH2MHill
DPTG APPROVED B THOMPSON		CH2MHill
DESIGN AUTHORITY E GIRGIS		

U.S. DEPARTMENT OF ENERGY
Office of River Protection

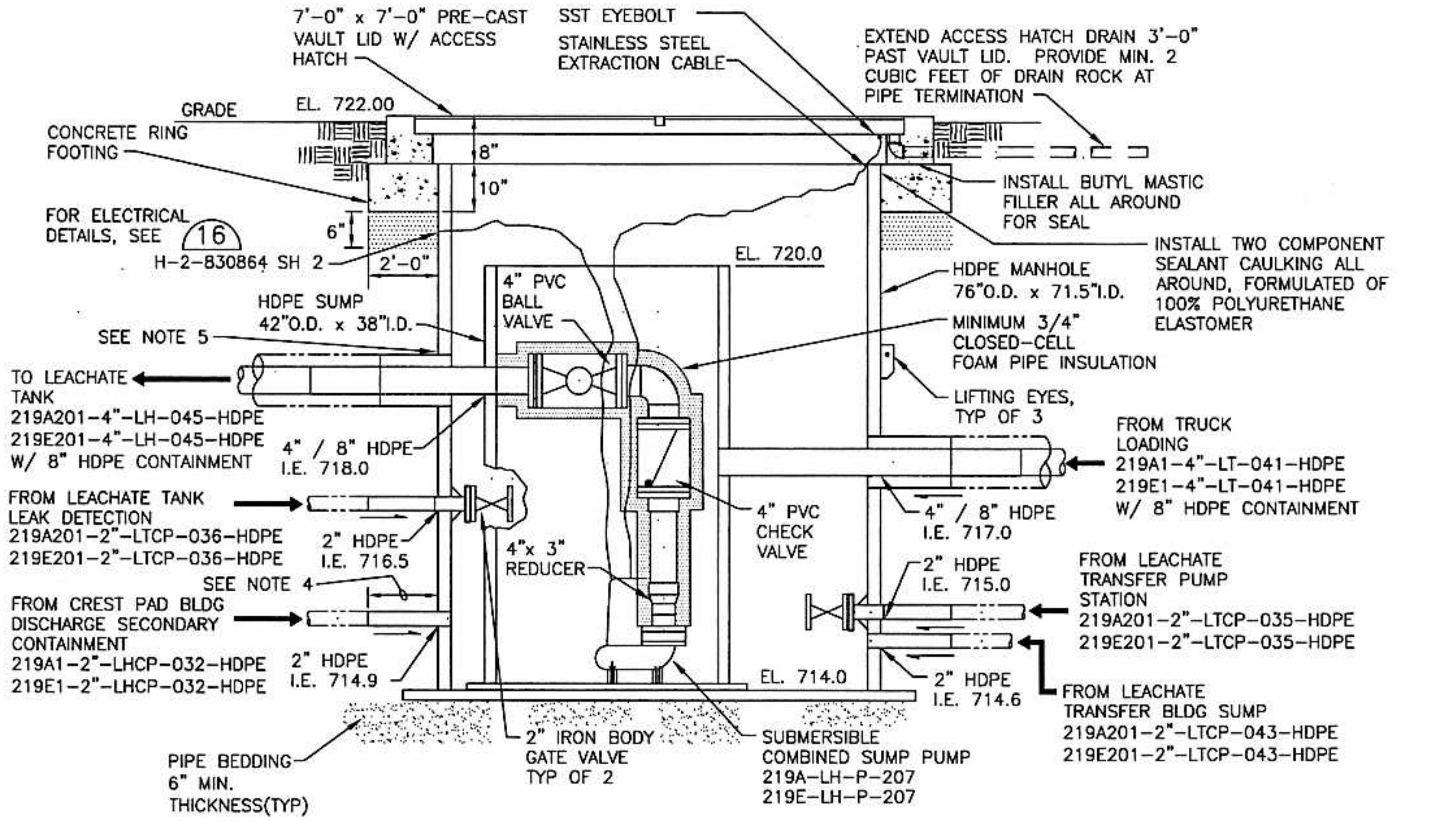
TITLE
IDF
LCRS/LDS/SLDS
SECTIONS AND DETAILS

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	200E	8500	H-2-830848	B

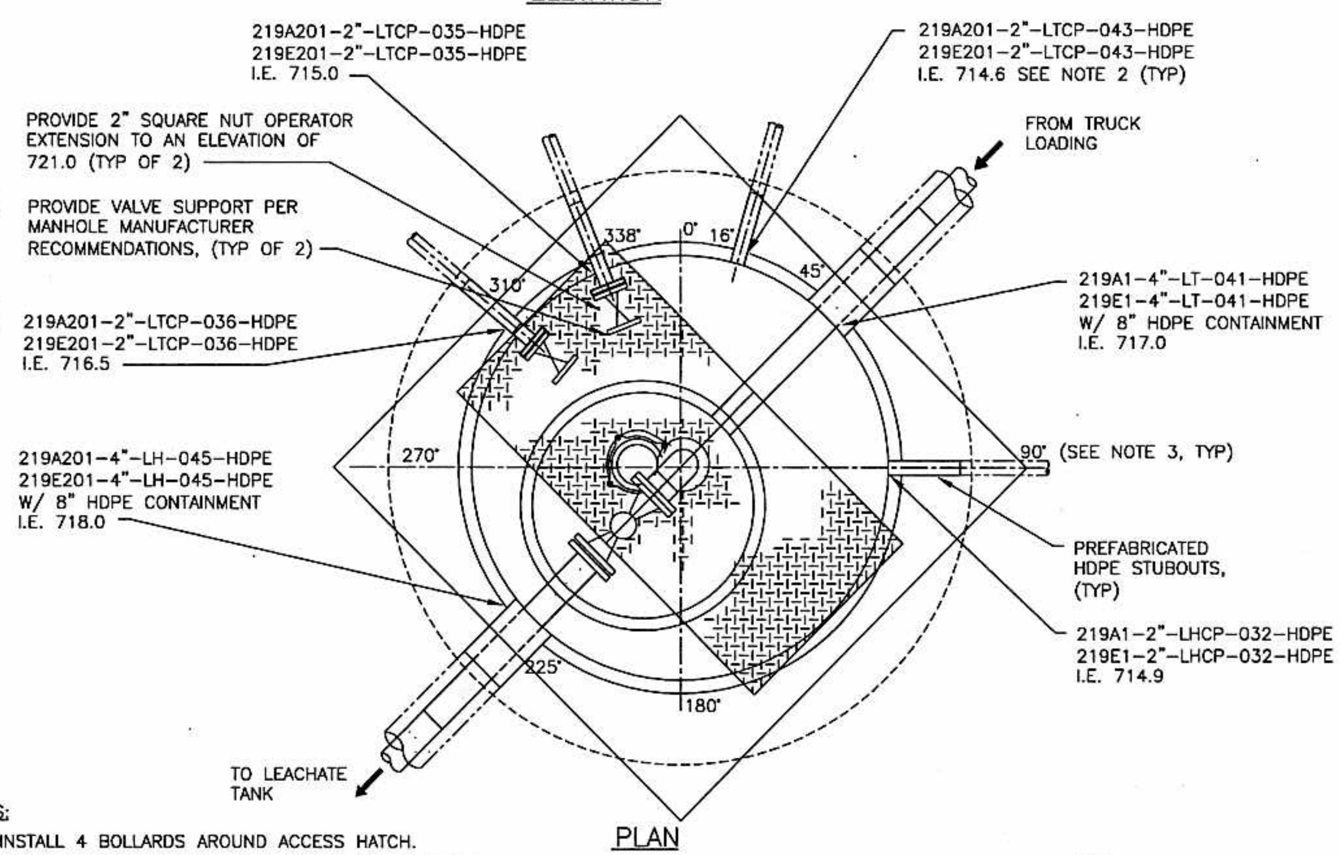
SCALE AS SHOWN EDT 634144 SHEET 1 OF 1

XXXX PLOTID XXXX

ORP_TB_D [12-02].DWG



ELEVATION

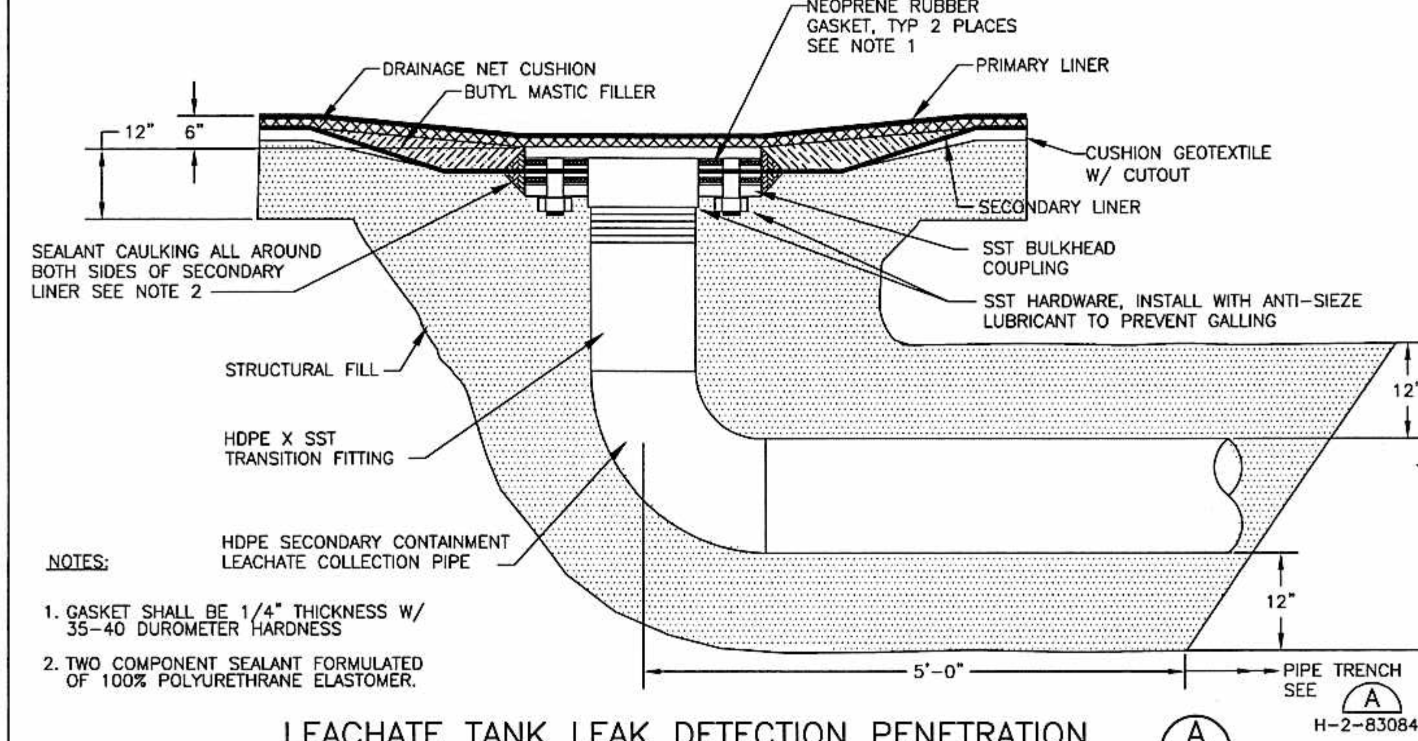


PLAN

NOTES:

1. INSTALL 4 BOLLARDS AROUND ACCESS HATCH.
2. PIPING AND EQUIPMENT DESIGNATIONS ARE IDENTIFIED FOR CELL 1 AND CELL 2. THE "219A" PREFIX IS FOR CELL 1 AND THE "219E" PREFIX IS FOR CELL 2.
3. MANHOLE STUBOUT ANGLES AND INVERT ELEVATIONS SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OF MANHOLE.
4. PROVIDE DISTANCE AS REQD TO BUTT FUSE IN FIELD, TYP.
5. PROVIDE FUSION WELDED GUSSETED, SHOP FABRICATED PENETRATION CONNECTIONS. NO FIELD WELDS, TYP.

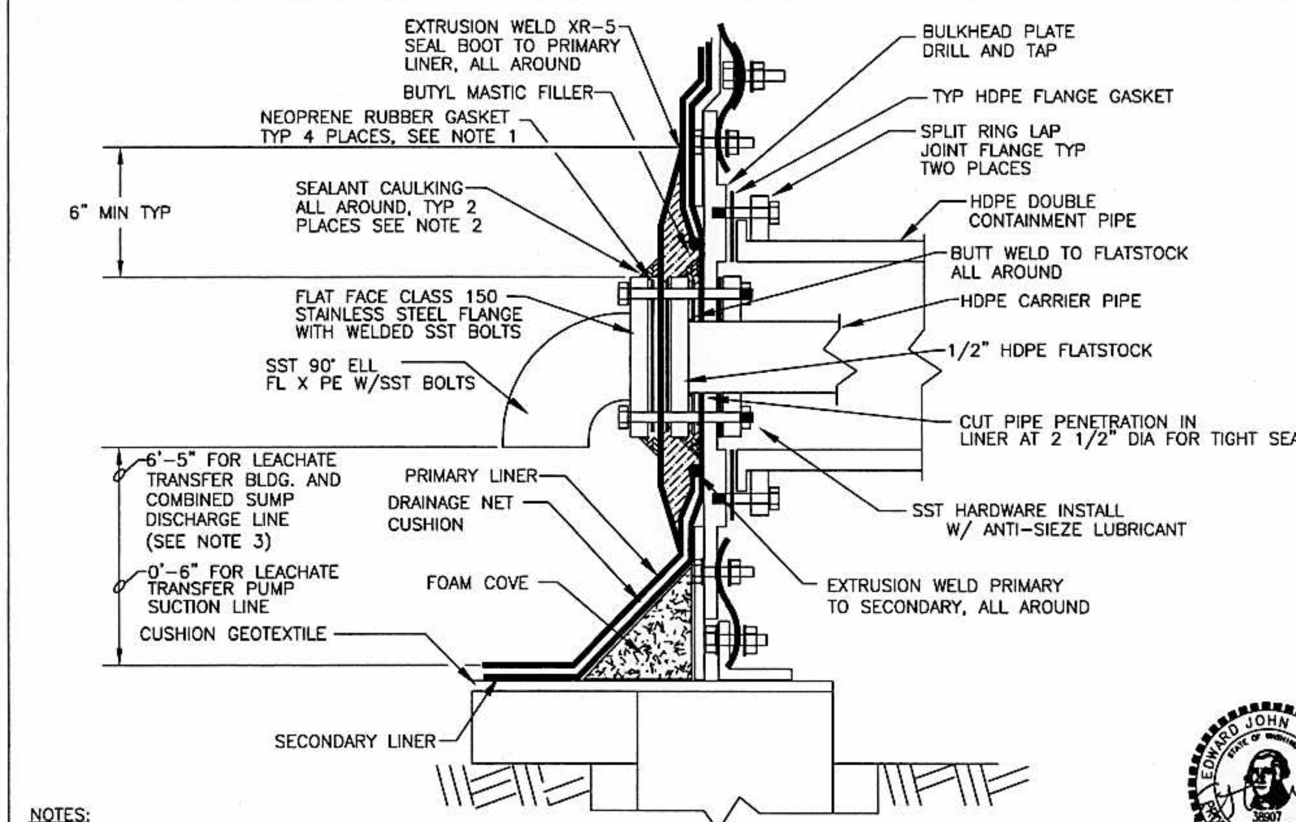
COMBINED SUMP MANHOLE (1)
NTS
H-2-830846



NOTES:

1. GASKET SHALL BE 1/4" THICKNESS W/ 35-40 DUROMETER HARDNESS
2. TWO COMPONENT SEALANT FORMULATED OF 100% POLYURETHRANE ELASTOMER.

LEACHATE TANK LEAK DETECTION PENETRATION (A)
NTS
H-2-830846



NOTES:

1. GASKET SHALL BE 1/4" THICKNESS W/ 35-40 DUROMETER HARDNESS.
2. TWO COMPONENT SEALANT FORMULATED OF 100% POLYURETHRANE ELASTOMER.
3. PROVIDE MIN. OF 2 PIPE SUPPORTS PER DISCHARGE LINE. PIPE SUPPORTS SHALL CONNECT TO TANK WALL PER TANK MANUFACTURER'S REQUIREMENTS.

LEACHATE TANK WALL PENETRATION (B)
NTS
H-2-830846

BLDG. NO. 200E

INDEX NO. 8500

THIS SPACE RESERVED FOR BUILDING AND INDEX NUMBERS

EDWARD JOHN THOMAS — STATE OF WASHINGTON — 38907 — REGISTERED PROFESSIONAL ENGINEER — 2/9/04 — EXPIRES 8/4/05

CH2MHILL

DWG NO	TITLE	REF NUMBER	TITLE
		REFERENCES	
DRAWING TRACEABILITY LIST		NEXT USED ON	

MFD / REV Rel	REV NO	DESCRIPTION	REV BY DATE			ENGR COMPANY
REVISIONS						

NAME	DATE / COMPANY
DRAWN BY C BENTZ C. Bentz	2/9/04 CH2MHILL
DFTG APPROVED E THOMAS E. Thomas	2/9/04 CH2MHILL
DESIGN AUTHORITY E ORGIS Elie Orgis	2/9/04 CH2MHILL

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE
IDF
LCRS / LDS
SECTIONS AND DETAILS

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	200E	8500	H-2-830850	A

SCALE AS SHOWN | EDT 634144 | SHEET 1 OF 1

XXXX PLOTID XXXX | ORP_TB_D [12-02].DWG

CONTROL PANEL PLC PROCESSOR AND I/O MODULES

219A-LH-CP-001

LEVEL SIGNAL | ON STATUS | RUN COMMAND | AUTO STATUS — LI 104, YL 204, HS 204, 00, 00A

LEVEL SIGNAL | ON STATUS (2) | RUN COMMAND (2) | AUTO STATUS (2) — LI 101, YL 203, HS 203

FLOW SIGNAL — FI 203, FI 202, FI 204

LEAK STATUS | LEVEL STATUS (3) | ON STATUS | RUN COMMAND | AUTO STATUS — YL 205, HS 205

CREST PAD BLDG GENERAL ALARM — YL 219, ALARM

CREST PAD BLDG POWER ON STATUS — JSH 219

CREST PAD BLDG TEMPERATURE — TI 219, TIT 219, TE 219

ALARM ACKNOWLEDGE — HS 219, ACK

ENCLOSURE 219A-LH-ENCL-001

(SAME FOR P202)

INTERLOCK CONNECTING FOR CONTINUATION SEE H-2-830854 SHT 2 (TYP) (SEE NOTE 5)

219A-LH-LCP-002

HS 105 LEVEL HIGH SHUTDOWN INTERLOCK COMMAND

BYPASS SWITCH

LEVEL STATUS (TYP 3)

CV-023, V-024, V-042, PI 205

LSHH 105, LSH 105, LSL 105

460V

LDE 105

CREST PAD BUILDING SUMP

P 205

1-1/2" PVC

SENSOR CABLE TJB (TYP OF 2)

TBX

3"-LH-048-HDPE

3"-LH-001-HDPE

ARV-032, FIT 203, FE 203, PI 203, V-003, V-002, V-001, VB-044, M, CV-004, V-006, V-005, 3" PVC

ARV-035, V-021

18"-LHCP-025-HDPE

ARV-033, FIT 202, PI 202, V-009, V-008, V-007, FE 202, CV-010, V-012, V-011, VB-045, 1" PVC

HIGH, 460V, P 203, LT 101

12"-LHCP-026-HDPE

1-1/2"-LH-009-HDPE

ARV-034, FIT 204, PI 204, V-015, V-014, V-013, CV-016, V-017, V-018, V-019, V-020, VB-046, FE 204

LOW, 460V, P 202

LEACHATE COLLECTION AND REMOVAL SUMP

1-1/2" PVC RECIRCULATION LINE

12"-LHCP-027-HDPE

1-1/2"-LH-015-HDPE

12"-LHCP-049-HDPE

SOLAR POWERED DATA LOGGER

LEVEL SIGNAL

219A-LH-LCP-208

SLDS ACCESS PAD

460V

LT 104, P 204

SEE NOTE 4

LEAK DETECTION SUMP

LT 108

SECONDARY LEAK DETECTION SUMP

(219A)-3"- LH-024-HDPE SEE NOTE 3 THIS SHT (TYP)

6", 3" PVC

H-2-830854-2

3" PVC

F 206, VENT V-049, F, V-047, V-048, V-050, V-051, DRAINS, DPI 206

NOTES:

1. SEE DWG NO. H-2-830825, SHT 2 FOR LEGEND SYMBOLOGY.
2. SEE SUPPLEMENTS IN SPEC SECTION 13401 PROCESS INSTRUMENTATION CONTROL SYSTEMS (PICS) FOR DESCRIPTION OF INSTRUMENTATION AND PICS EQUIPMENT.
3. PREFIX IDENTIFIER FOR ALL INSTRUMENTS, VALVES, PROCESS PIPING, AND EQUIPMENT ON THIS SHT IS 219A-LH UNLESS SHOWN OTHERWISE.
4. SUBMERSIBLE LEVEL TRANSMITTER SUPPLIED UNDER SECT 13401 PICS, INTEGRATED WITH PUMP UNDER SECTION 11306.
5. FOR INTERLOCK CONFIGURATIONS SEE SHTS H-2-830857 AND H-2-830863.

CELL #1
CREST PAD BUILDING 219A

BLDG. NO. 219A 219A1 219A201 219E 219E1 219E201

INDEX NO.

THIS SPACE RESERVED FOR BUILDING AND INDEX NUMBERS

LAWRENCE GERARD FOX STATE OF WASHINGTON 35278 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 09/18/

CH2MHILL

DRAWING TRACEABILITY LIST		REFERENCES	
DWG NO	TITLE	REF NUMBER	TITLE
		NEXT USED ON	

REVISIONS				
MFD REV No	REV NO	DESCRIPTION	REV BY DATE	ENGR COMPANY
	B	ADDITION OF SLDS	4/23/04	E THOMAS CH2MHill

NAME	DATE	COMPANY
DRAWN BY L WAGNER		CH2MHill
DTG APPROVED L FOX		CH2MHill
DESIGN AUTHORITY E GIRGIS		

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE: IDF CELL #1 P&ID

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	219A	7004	H-2-830854	B

SCALE NONE | EDT 634144 | SHEET 1 OF 4

XXXX PLOTID XXXX | ORP_TB_D [12-02].DWG

CONTROL PANEL PLC PROCESSOR AND I/O MODULES

219E-LH-CP-001

LEVEL SIGNAL | ON STATUS | RUN COMMAND | AUTO STATUS | LEVEL SIGNAL | ON STATUS (2) | RUN COMMAND (2) | AUTO STATUS (2) | FLOW SIGNAL | FLOW SIGNAL | FLOW SIGNAL | LEAK STATUS | LEVEL STATUS (3) | ON STATUS | RUN COMMAND | AUTO STATUS | CREST PAD BLDG GENERAL ALARM | CREST PAD BLDG POWER ON STATUS | CREST PAD BLDG TEMPERATURE | ALARM ACKNOWLEDGE

120V LI 104 — 120V YL 204 00 — HS 204 00A — @ MCC

120V LI 101 — (SAME FOR P202)

120V YL 203 00 — HS 203 00A — (SAME FOR P202) — @ MCC (SAME FOR P202)

INTERLOCK CONNECTING FOR CONTINUATION SEE H-2-830854 SHT 4 (TYP) (SEE NOTE 5)

120V FI 203 — FI 202 — FI 204

120V YL 205 00 — HS 205 00A — @ MCC

219E-LH-LCP-002

00 HS 105 LEVEL HIGH SHUTDOWN INTERLOCK COMMAND

BYPASS SWITCH

LEVEL STATUS (TYP 3)

LSHH 105 — LSH 105 — LSL 105

LDE 105

CV-023 — V-024 — V-042 — PI 205

460V

P 205

CREST PAD BUILDING SUMP

1-1/2" PVC

120V ALARM (219) YL 219

120V JSH 219 — TI 219 — TIT 219 — TE 219

120V HS 219 ACK

ENCLOSURE 219E-LH-ENCL-001

SENSOR CABLE TJB (TYP OF 2)

TBX — TBX

3"-LH-048-HDPE — 3"-LH-001-HDPE

120V FIT 203 — ARV-032 — V-002 — FE 203 — M

PI 203 — V-003 — V-001 — VB-044

3"-LH-003-PVC — CV-004 — V-006 — V-005

ARV-035 — V-021

3" PVC

18" LHCP-025-HDPE

120V FIT 202 — ARV-033 — V-008

PI 202 — V-009 — V-007 — M — FE 202

1" PVC — CV-010 — V-012 — V-011

VB-045

HIGH — 460V — P 203

LT 101

12"-LHCP-026-HDPE

1- 1/2"-LH-009-HDPE

120V FIT 204 — ARV-034 — V-014

PI 204 — V-015 — V-013 — M — FE 204

1" PVC — CV-016 — V-018 — V-017 — V-019 — V-020

VB-046

LOW — 460V — P 202

LEACHATE COLLECTION AND REMOVAL SUMP

1-1/2" PVC RECIRCULATION LINE

12"-LHCP-027-HDPE

1- 1/2"-LH-015-HDPE

12"-LHCP-049-HDPE

SOLAR POWERED DATA LOGGER — LEVEL SIGNAL — 219E-LH-LCP-208

SLDS ACCESS PAD

B

460V — LT 104 — P 204 — SEE NOTE 4 — LEAK DETECTION SUMP

LT 108 — SECONDARY LEAK DETECTION SUMP

219E-3"-LH-024-HDPE SEE NOTE 3 THIS SHT (TYP)

6" — H-2-830854-4 C

3" PVC — 3" PVC

F 206 — VENT V-049 — F — V-047 — V-048 — V-050 — V-051 — DRAINS

DPI 206

NOTES:

1. SEE DWG NO. H-2-830825, SHT 2 FOR LEGEND SYMBOLOGY.
2. SEE SUPPLEMENTS IN SPEC SECTION 13401 PROCESS INSTRUMENTATION CONTROL SYSTEMS (PICS) FOR DESCRIPTION OF INSTRUMENTATION AND PICS EQUIPMENT.
3. PREFIX IDENTIFIER FOR ALL INSTRUMENTS, VALVES, PROCESS PIPING, AND EQUIPMENT ON THIS SHT IS 219E-LH UNLESS SHOWN OTHERWISE.
4. SUBMERSIBLE LEVEL TRANSMITTER SUPPLIED UNDER SECT 13401 PICS, INTEGRATED WITH PUMP UNDER SECTION 11306.
5. FOR INTERLOCK CONFIGURATIONS SEE SHTS H-2-830857 AND H-2-830863.

CELL #2
CREST PAD BUILDING 219E

BLDG. NO.
219A
219A1
219A201
219E
219E1
219E201

INDEX NO.

THIS SPACE RESERVED FOR BUILDING AND INDEX NUMBERS

LAWRENCE GERARD FOX — STATE OF WASHINGTON — 35278 REGISTERED PROFESSIONAL ENGINEER
EXPIRES 09/18/

CH2MHILL

DWG NO	TITLE	REF NUMBER	TITLE
DRAWING TRACEABILITY LIST		NEXT USED ON	REFERENCES

MFD REV No	REV NO	DESCRIPTION	REV BY DATE	NAME	DATE	COMPANY
	B	ADDITION OF SLDS	4/23/04	E THOMAS		CH2MHill
REVISIONS				ENGR		COMPANY

NAME	DATE	COMPANY
DRAWN BY L WAGNER		CH2MHill
DPTG APPROVED L FOX		CH2MHill
DESIGN AUTHORITY E GROS		

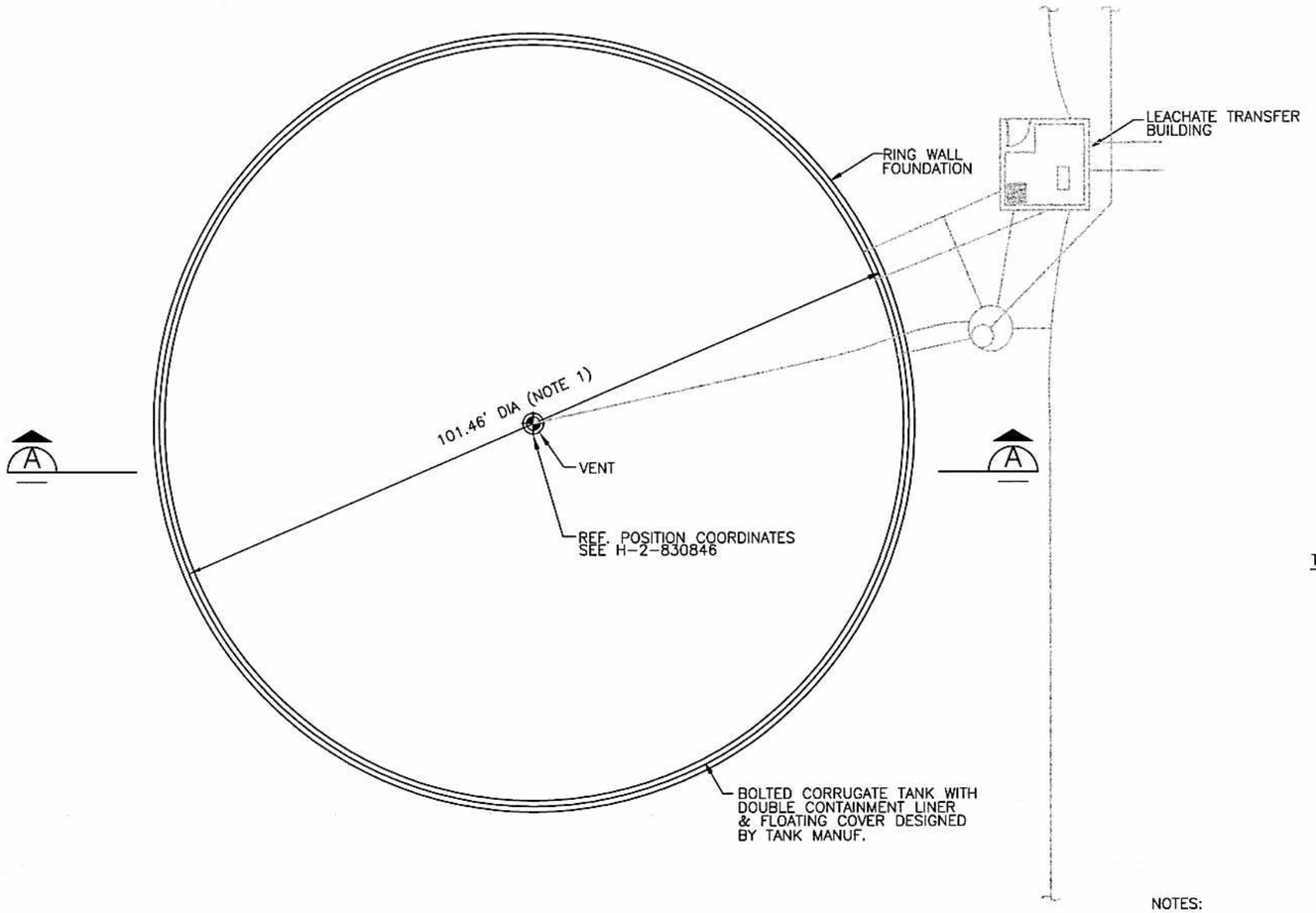
U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE
IDF
CELL #2 P&ID

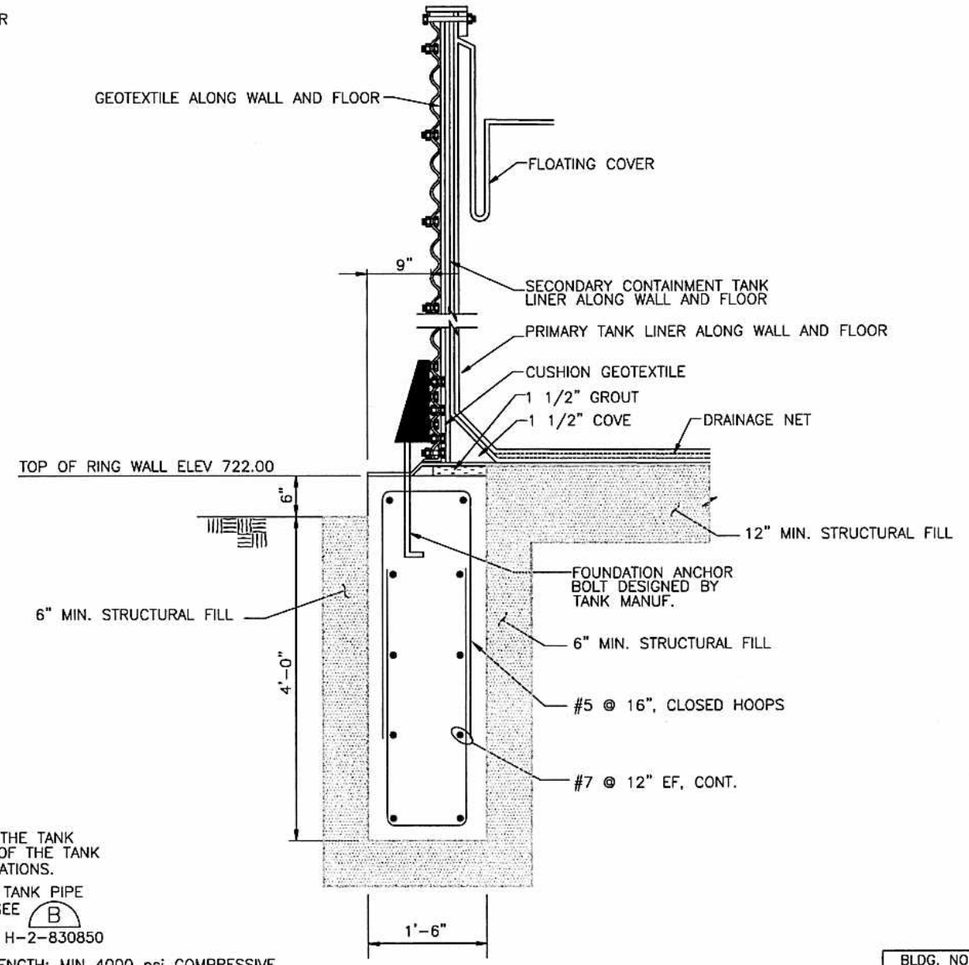
SIZE	BLDG NO	INDEX NO	DWG NO	REV
D		7004	H-2-830854	B

SCALE NONE | EDT 634144 | SHEET 3 OF

XXXX PLOTID XXXX | ORP_TB_D [12-02].DWG



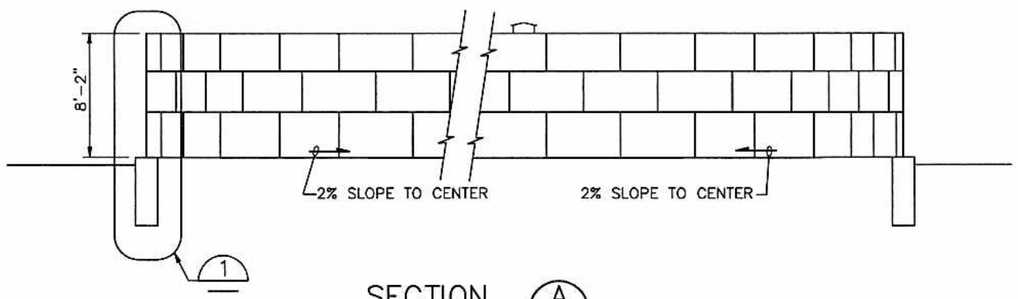
FLOOR AND ROOF PLAN
3/32"=1'-0" TYP FOR 219A201 & 219E201



NOTES:
1. DIAMETER FOR THE TANK REFERS TO ℄ OF THE TANK SHELL CORRUGATIONS.
2. FOR LEACHATE TANK PIPE PENETRATION, SEE (B) H-2-830850
3. CONCRETE STRENGTH: MIN 4000 psi COMPRESSIVE (CLASS 40) @ 28 DAYS

REINFORCING STEEL: ASTM 615, GRADE 60

DETAIL (1)
1"=1'-0"



SECTION (A)
3/16"=1'-0"

BLDG. NO. 219A201 219E201

INDEX NO. 0900

THIS SPACE RESERVED FOR BUILDING AND INDEX NUMBERS

SAYNJI GOTO STATE OF WASHINGTON 35654 REGISTERED PROFESSIONAL ENGINEER
02/04/04
EXPIRES 7/27/04

CH2MHILL

NAME	DATE	COMPANY
DRAWN BY R LATTA	2/4/04	CH2MHILL
DFTG APPROVED S. GOTO	2/4/04	CH2MHILL

U.S. DEPARTMENT OF ENERGY
Office of River Protection

TITLE: IDF LEACHATE TANK FOUNDATION PLAN, SECTION & DETAIL

SIZE	BLDG NO	INDEX NO	DWG NO	REV
D	219A201 219E201	0900	H-2-830869	A

SCALE AS SHOWN EDT 634144 SHEET 1 OF 1

DESIGN AUTHORITY E GRIGS 2/4/04 CH2MHILL

DWG NO	TITLE
DRAWING TRACEABILITY LIST	

REF NUMBER	TITLE
REFERENCES	
NEXT USED ON	

MFD REV INI	DESCRIPTION	REV BY DATE	ENGR COMPANY
REVISIONS			

XXXX PLOTID XXXX

DRP_TB_D (12-02).DWG